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ABSTRACT

This evaluation of the Developmental Studies Program at Thomas Nelson Community College (TNCC) draws from five in-depth studies of the characteristics, academic achievement, and persistence of developmental students and from other TNCC reports. After introductory material on the history and purpose of the program evaluation, a four-part summary of the research findings is presented. Part I outlines the characteristics of first-time students at TNCC and describes the philosophy, policies, and practices of the Developmental Studies Program. Part II looks at the performance of the developmental students in remedial courses and in subsequently taken credit courses. Part III focuses on the persistence, graduation rates, educational attitudes, and post-graduation employment status of the developmental students. Part IV offers conclusions and recommendations. After presenting the questionnaires administered to the developmental students before and after graduation, the four research studies from which the summary was drawn are provided. Procedures, findings, and data are presented for studies of: (1) the retention, grade point average, and graduation rates of developmental students, from enrollment in remedial courses in 1974 through 1977; (2) student performance in developmental mathematics; (3) student performance in reading improvement; and (3) student performance in verbal studies. (AYC)

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A PROGRAM EVALUATION AND STUDENT FOLLOW-UP OF DEVELOPMENTAL STUDIES STUDENTS AT THOMAS NELSON COMMUNITY COLLEGE 1975-1977

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PREFACE

Thomas Nelson Community College, a two-year, post secondary institution, was established at the center of Virginia Tidewater Peninsula in 1968. As a part of the state community college system, TNCC is funded principally through state revenues and serves the cities of Hampton, Newport News, Poquoson, Williamsburg, and the counties of James City and York.

In its role as a community college, Thomas Nelson is dedicated to the belief that every individual should be afforded the opportunity to develop his educational capabilities to the fullest extent. Therefore, the college seeks to serve any adult member of the community who wishes to attend.

Since the college subscribes to the "open-door" policy, many entering students have academic deficiencies in reading, basic writing, and computational skills. Remedial or developmental work is prescribed for these students, and this work must be completed prior to their entering specified credit courses.

Three programs of study--English, reading, and mathematics--have been designed specifically for students deficient in one or more of these basic skills. The faculty members in these departments, comprising the Developmental Studies Division, focus all their efforts toward achieving one major objective: offering courses that meet the needs of the underprepared student in order to lead him toward a successful academic experience. Inherent in the philosophy of the Division is the desire to keep abreast of current trends in developmental studies and to continually update courses, programs, methods, and materials for student growth and preparation. The Division needed an evaluation instrument that would constantly reassess the effectiveness of changes in the developmental program. This study is a result of that need.

We wish to express our thanks to Charles Bragg, Warren Painter, and all other developmental studies faculty who added their expertise in this endeavor.

We would also like to express our appreciation to Johnnie Simpson, Division Chairman of Developmental Studies, for her help and support and to Dr. Joe Peone, Dean of Instruction, for his faith in our efforts.

Finally, we wish to acknowledge the contributions of Dr. Stuart Bounds, Director of Institutional Research, who supplied us with the raw data, wrote the brief on the retention and performance of developmental students, and gave advice and ideas for the project. We are truly grateful for his help.

INTRODUCTION

History of the Study

In the Fall of 1976, three developmental mathematics instructors--Charles Bragg, Deborah Hale, and Herman Lawson--initiated efforts toward planning a follow-up study of developmental students. They wanted to determine the reason(s) why some students never entered the credit math courses for which the developmental math program had prepared them. In addition, they wondered if the factors that contributed to students withdrawal from developmental math could possibly be the same factors that contributed to students not entering other credit courses requiring developmental reading and English preparation. At that time, there was no comprehensive attempt: (1) to evaluate the performance of developmental students in credit courses, (2) to determine the contribution of developmental studies to the college in terms of student success, or (3) to continually assess the effect of changes in developmental course content and/or teaching technique on student success.

After two years of planning and consulting with Dr. Stuart M. Bounds, Director of the Office of Institutional Research, Herman Lawson was selected to compile and condense all theoretical ideas into a written format. This rather comprehensive manuscript was entitled "A Plan for Continuous Evaluation of The Thomas Nelson Community College Developmental Studies Program."

In the Fall of 1978 a committee of five developmental instructors, Pearl C. Braxton, Sybil G. Douthat, Deborah A. Hale, Gerald M. Safko, and Daniel C. Sims, was formed to restructure the plan, design the evaluation instrument, and re-evaluate the instrument after its implementation.

To accomplish these objectives, the committee proceeded to prepare five separate in-depth studies. These studies are presented in written form as briefs and are found on pages 29-151 of this report. As a comprehensive research paper this report draws from these five briefs as well as from other TNCC research papers to evaluate all aspects of our developmental structure.

Objectives

The developmental studies program at Thomas Nelson has been in operation for over ten years. In this period of time, this program has expanded from a core of two full-time faculty members to a separate division consisting of one division chairperson, sixteen full-time faculty and sixty-one adjunct faculty members, with one instructional assistant. In an effort to better serve the students enrolled each year, the faculty has developed extensive learning objectives for each course and has provided alternative methods of instruction to accommodate a variety of student learning patterns. As an outgrowth of the desire to improve instruction, the research committee felt the need to devise and implement a system of self-evaluation that would be of invaluable use to the

division in determining strengths, weaknesses, and possible solutions for problem areas. Also, through the instrument's implementation each year, the continuous feedback received would give the division an efficient means of assessing the effectiveness of different approaches and materials introduced into developmental courses.

In the ten years of its existence, the division has become a forerunner in the field of developmental studies education. A storehouse of information has been accumulated that could be used in designing a process of self-evaluation. The research committee felt the need to design this instrument so that it could serve as a model for other institutions that wish to construct such a system to assess their own programs.

Description of the Study

This study embodies four distinct points of departure. Phase I outlines the characteristics and attitudes of the developmental studies student and describes how the developmental program functions. Phase II studies the performance of these students in their developmental program and the accountable factors for student withdrawal. Phase III focuses on the successful developmental students and compares their performance in credit courses to the performance of the non-developmental students in those credit courses. In the last Phase, attention is given to the students who are successfully persistent and graduate from TNCC.

Definition of Terms

1. Developmental Group - those students who are enrolled, or have previously enrolled, in non-traditional courses to help them master the basic communication and computational skills that are essential in achieving their educational objectives.

2. "Other" Students - initially this group was to represent those students who had not taken developmental courses. Due to difficulty in comparing the grade data, "Other" students include all non-developmental as well as any other students who might have enrolled in a developmental course previously, but not as first time students in Fall 1974 or Fall 1975.

3. Attempted the Course - those students who received a grade of S, R, U, or W. Students whose names appeared on the temporary roll but not on the permanent roll did not attempt the course.

PHASE I
THE STUDENT

First Time Student

Before our discussion of the developmental studies student, we will view the general characteristics of first-time students entering TNCC. The following information was collected from the TNCC Statistical Abstract 1977-1978 published through the Office of Institutional Research. This source lists the general characteristics of all first-time students entering TNCC.

In 1977, 40% of TNCC first-time students were over 21, 49% were women, 36% were black, 37% were veterans receiving G.I. Bill benefits, and 24% were married.

Eighty-nine percent of these first-time students indicated TNCC was their college of first choice. Twenty percent enrolled to increase their knowledge and education whereas 22% enrolled to prepare for transfer to a four-year college.

Two out of every five of these 1977 incoming students took courses in the Developmental Studies Division. A student is placed in this program after the Counseling Center examines his high school transcript, test scores, and other data concerning his achievement level. A student taking one or more developmental courses is placed into the developmental program and will not be admitted into his chosen curriculum until he has successfully completed all his developmental requirements.

The Developmental Student

To investigate the developmental studies population, we refer to the brief entitled The Retention and Performance of Developmental Students, pages 29-41 of this report. This study was conducted to research whether the survival rate, the grade point average (GPA), and the rate of graduation of developmental students varied greatly from those of "Other" students. The impact of race and sex as intervening variables was also of interest. According to the brief, race and sex were clearly related to developmental status. In comparing the two groups, developmental and "Other," the developmental group had a larger proportion of either males (all races) or blacks (both sexes) than did the non-developmental group.

THE DEVELOPMENTAL STUDIES PROGRAM

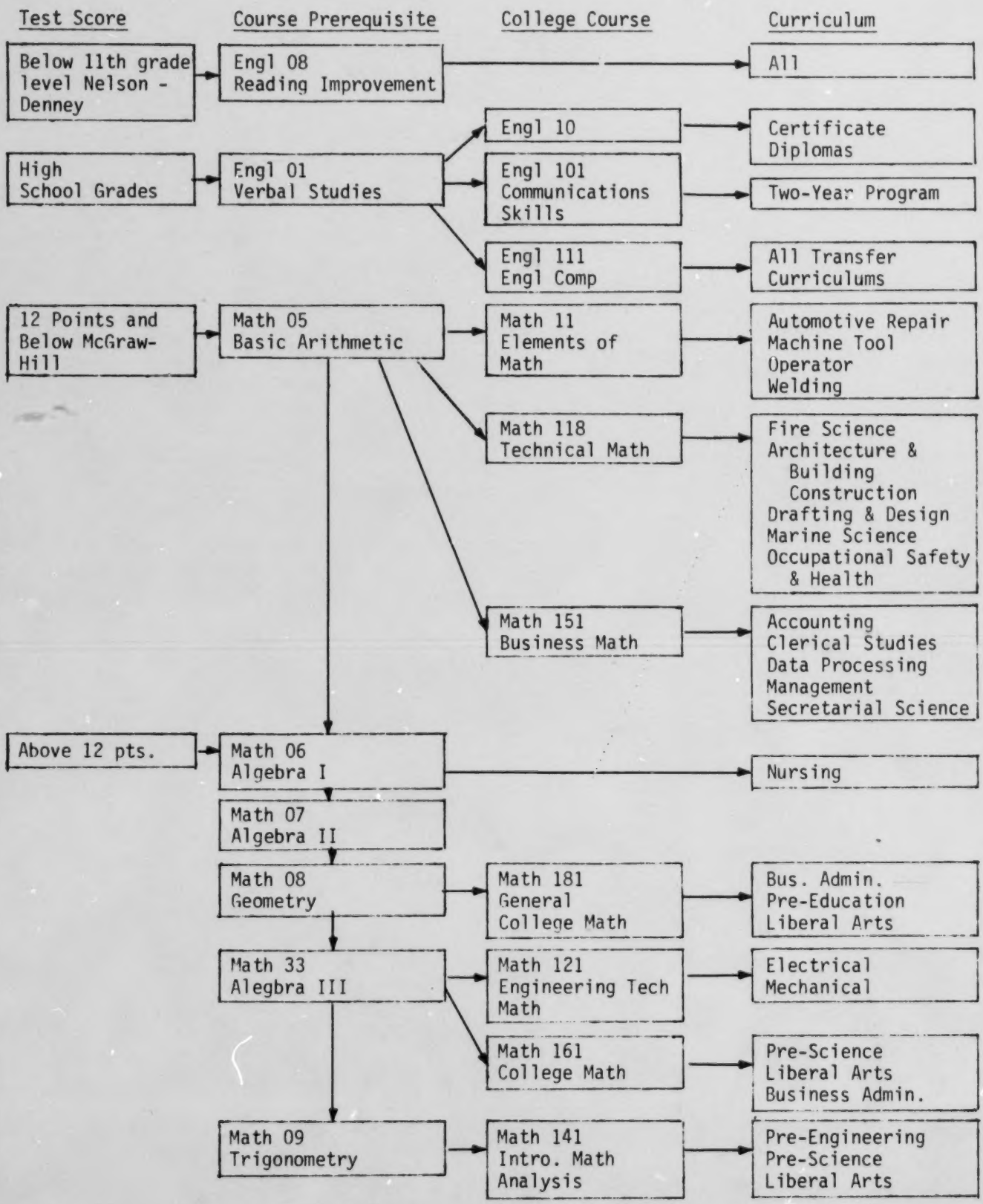
The developmental studies program is offered to help prepare individuals for entry into credit courses in the occupational-technical and college transfer curriculums of the college. In the event that a student previously has not had an opportunity to complete an appropriate educational course or program or has had low achievement in his previous educational endeavors, developmental courses will help him acquire the basic skills and understanding necessary to succeed in other programs of the college. Developmental courses also serve the needs of those students who wish to upgrade their job skills or who wish to study for the sake of self-improvement.

Philosophy of the Division

The faculty of the Developmental Studies Division is committed to the belief that students can learn. To that end, the student and the instructor assume joint effort and responsibility for student mastery of course objectives. All developmental faculty believe in the worth of the individual and believe that given successful learning experiences, a student can develop a positive image of himself as a learner.

A student's past performance is not always indicative of his future achievements The premise of the division is that students learn at different rates requiring varying times for goal achievement and are evaluated accordingly. The learning environment must be sufficiently flexible to adjust to the various needs of all students.

The division believes that students should be placed into courses which best fit their academic and experiential background. The major obligation is to offer courses which meet the needs of students requiring additional preparation for college courses and which can lead to their experiencing academic success. Programs of instruction in mathematics, reading, and English have been established and together function as a separate division of the college. The following is a schematic of the complete developmental program as it existed in 1975.


Test Score
Course Prerequisite
College Course
Curriculum
Below 11th grade level Nelson - Denney
Engl 08 Reading Improvement
All
High School Grades
Engl 01 Verbal Studies
Engl 10
Certificate Diplomas
Engl 101 Communications Skills
Two-Year Program
Engl 111 Engl Comp
All Transfer Curriculums
12 Points and Below McGraw-Hill
Math 05 Basic Arithmetic
Math 11 Elements of Math
Automotive Repair
Machine Tool Operator
Welding
Math 118 Technical Math
Fire Science
Architecture & Building Construction
Drafting & Design
Marine Science
Occupational Safety & Health
Math 151 Business Math
Accounting
Clerical Studies
Data Processing
Management
Secretarial Science
Above 12 pts.
Math 06 Algebra I
Nursing
Math 07 Algebra II
Math 08 Geometry
Math 181 General College Math
Bus. Admin.
Pre-Education
Liberal Arts
Math 33 Alegbra III
Math 121 Engineering Tech Math
Electrical
Mechanical
Math 161 College Math
Pre-Science
Liberal Arts
Business Admin.
Math 09 Trigonometry
Math 141 Intro. Math Analysis
Pre-Engineering
Pre-Science
Liberal Arts

The Developmental Mathematics Program

The Developmental Math Program at TNCC is designed to strengthen a student's overall math ability to the level necessary for entry into the math courses required by his curriculum.

The college counselors evaluate the student's high school grades in math to determine whether the student has an adequate math background to be placed directly into one of the advanced developmental courses (Math 08, Math 33, or Math 09). If a student's high school grades are not available or his records indicate inadequate preparation, the counselor will administer the McGraw-Hill Mathematics Test to him prior to his registering for classes.

Depending upon the results of this test, a student may need to enroll into one or more of the following six courses:

Math 05 - Basic Arithmetic
Math 06 - Basic Algebra I
Math 07 - Basic Algebra II
Math 08 - Basic Geometry
Math 33 - Basic Algebra III
Math 09 - Trigonometry

Not all curriculums require the same amount of preparation in mathematics. Some curriculums require only arithmetic while others require more advanced courses as well. The schematic of our developmental program on page 5 reflects the developmental courses required for entrance into a credit math course.

The Developmental Reading Program

The reading program (English 08-Reading Improvement) is designed to assist each student in realizing and overcoming his individual reading problems. This department is primarily concerned with the development of the reading ability of college freshmen who have demonstrated inadequate preparation in the areas of comprehension and vocabulary. Students who reveal reading deficiency and do not meet curriculum or course entrance requirements are, in most cases, required to enroll in the Developmental Studies Program. The Nelson-Denny Reading Test is utilized by the Counseling Center to determine proper student placement.

The Developmental English Program

English 01, Verbal Studies, is a developmental course designed to instruct students in the fundamentals of grammar, mechanics, punctuation, and paragraph writing for successful entry into the course required by their curriculums. Placement of students into Verbal Studies is decided primarily on the basis of a student's high school transcripts and specific academic placement tests (i.e. Nelson Denny and the Comparative Guidance and Placement English Test).

For a complete description of each developmental program refer to the introduction of each brief.

General Policies and Procedures (1975)

In the Developmental Studies Program, the student could utilize either of two approaches to increase his knowledge and improve his skills. In one approach, he could enroll in the regular developmental studies courses scheduled each quarter at the college. In the other approach, the student could use the materials and equipment in the Learning Laboratory for individual study of appropriate units or course materials in the areas of his deficiencies. Personnel in the Learning Laboratory or other faculty members of the college were available to provide individualized assistance for the student. The student could progress at his own rate to complete a unit of study at any time that he demonstrated sufficient mastery of that unit.[1]

While in the Developmental Studies Program, the student was required to consult with his faculty advisor to select his courses for successive academic quarters. Also, the student was urged to consult with the counselors and with the Division Chairman of his intended curriculum when such action appeared desirable.

Grading Policy (1975)

A grade of "S" (satisfactory) was assigned for successful completion of each developmental course.

Students making satisfactory progress but not completing all of the behavioral objectives for a developmental course received a grade of "R" (re-enroll) and were required to re-enroll to complete the course objectives.

Students not making measurable progress in developmental courses received a grade of "U" (unsatisfactory) and had to consult with their counselor for a re-examination of academic goals. Students receiving a grade of "U" in a developmental course were restricted from re-enrolling in that course during the next two quarters at the college (this policy has since been changed).

A grade of "W" (withdrawal) indicated that the student was making satisfactory progress in the course at the time of his withdrawal or that the withdrawal was officially made before the "deadline" date published in the College Calendar. A "W" grade carried no credit.

Attendance Policy (1975)

Students were encouraged to attend class regularly. A student was subject to withdrawal from class if he missed twenty percent of the class meetings.

[1] TNCC Bulletin Of Information, 1975-1976, pages 102-103.

Withdrawal Policy (1975)

A student could withdraw from a course without academic penalty within the first three weeks after the beginning of a quarter. The student then received a grade of "W". After the third week the student received the grade of "R" or "U" depending upon the circumstances.

PHASE II PART A
PERFORMANCE OF THE DEVELOPMENTAL STUDIES STUDENT IN DEVELOPMENTAL COURSES

Our statistics presented in this phase will be drawn from the briefs entitled Developmental Follow-up Study, Student Performance in English 08 - Reading Improvement, Fall 1976 - Spring 1977, Developmental Follow-up Study, Student Performance in English 01 - Verbal Studies, Fall 1976 - Spring 1977, and the two briefs entitled Developmental Follow-up Study, Student Performance in Developmental Mathematics, Fall 1975 - Fall 1977 and Developmental Follow-up Study, Student Performance in the Complete Developmental Math Program, Fall 1975 - Fall 1977.

Quite simply, of the total number of students who entered Thomas Nelson for the first time and who initially enrolled in a developmental course, the following percentages represent the portions that eventually completed their developmental course with a grade of S: 58% of the English 08, 62% of the English 01, and a mean of 74% of the developmental math students. However, the percentages change significantly depending upon how the data is analyzed. For example, if the number of students who withdrew from the course prior to the end of the quarter were eliminated, then the percentage of success increases in all areas, math, English, and reading. That is, 70% of the English 08 students, 71% of the English 01 students, and a mean of 83.4% of the developmental math students were successful.

Although the majority of the students in each of the three areas of developmental preparation were successful in their first attempt at the course, there were some students who were not successful and had to repeat the course. These students were either slow learners, students severly limited in their academic abilities, or students lacking the educational experience. They needed much more time than the regular ten week session to complete the course objectives.

In considering the success rate of this group of students who repeated the course, a considerable number were able to complete the course successfully at a later attempt. A little less than half of those repeating Math 05 and one third of those repeating Math 06 were successful.

In the English 08 course, about half of the repeaters were successful the second quarter and fifty percent were successful the third quarter. The findings of the English 08 study indicated that the reading course was most beneficial to those students who were reading on a 9th or 10th grade level.

The success rate of the students who re-enrolled in the English 01 course for a second and third attempt was forty-eight and forty-nine percent, respectively. Also, the statistics from the English 01 brief verify that students who re-enrolled immediately to complete the course did, indeed, perform better than those students who waited one or more quarters before repeating the course.

For a complete detail of program descriptions, data analysis, and conclusions please refer to the briefs following this report.

A gradual reduction in student enrollment (attrition) has generally abated our efforts to stabilize enrollment at Thomas Nelson. With the predicted decline in high school graduates over the next decade, fewer numbers of students will be available to attend community colleges. In view of this decrease in prospective enrollment, there is an urgent need to concentrate a more directed effort towards identifying and analyzing those factors that contribute to student withdrawal at Thomas Nelson. Within the scope of this study, we, the research committee, have concentrated our efforts toward analyzing attrition in developmental studies. In following this course of action, we attempted to answer these questions:

1. What is the rate of student attrition in developmental studies?

2. What instrument can be used to determine the factors involved?
   a. What are the factors that contribute to student attrition?
   b. Which factors can be administratively or academically controlled?

3. What can the developmental studies division do to improve student retention?

Attrition is a very complex issue to study since there are many factors that contribute to student withdrawal. One may obtain a clearer understanding of this complex issue if the following categories are taken into consideration: The first two categories involve internal factors while the last category relates to factors that are external to the college.

(i) There are factors that contribute to student attrition that are the result of a positive academic or personal experience in developmental studies. For example, a student may have been able to reach his desired objective by learning a portion of the course material for self-improvement or job promotion. It may not have been necessary for that student to have completed the course if he felt that the other course objectives were not relative to his goal.

Other causes for attrition may occur as the result of a change in the student's curriculum. The student most likely will drop the course if the new curriculum does not require it.

In another instance, a student may enter a series of courses such as in the developmental math program. He may complete one or more courses and then withdraw. The fact that the student did not complete the entire sequence could be viewed as attrition. However, the student could have accomplished his educational objective at TNCC and then matriculated elsewhere.

(ii) Admittedly, there are some factors that contribute to attrition that are the result of a student's negative experience at TNCC. This experience may be directly related to his academic or personal relationship to the college or faculty. He may experience frustration due to complicated administrative procedures, boredom from ineffective teaching techniques, inadequate support services, or general disillusionment with community college environment.

(iii) There are a number of reasons for which students withdraw from class. Many of these reasons are in no way under faculty or administrative control. Various external factors, such as illness and family obligations, may prevent the student from completing his developmental work.

Although these three categories of factors all influence student withdrawal, we still do not know to what extent these factors were responsible for student attrition in developmental studies.

We first explored the area of instruction in order to ascertain any possible weaknesses in course content and/or teaching techniques. The instrument, a questionnaire, was devised to be mailed to those students who have dropped out of their developmental studies course. This questionnaire is an effort:

1. to determine those reasons why the unsuccessful student feels that he was unable to complete his developmental course,

2. to determine if the student withdrew from class for reasons which directly relate to the course content and/or the method of instruction used, and

3. to determine if the student feels that he still profited from the course even though he did not successfully complete it.

The complete questionnaire is presented on pages 21-26. The data obtained from this instrument will be incorporated into future studies in an effort to better analyze the factors accountable for student withdrawal from developmental studies. This valuable information should assist the division and its faculty in a directed effort to improve the rate of student retention.

PHASE III
PERFORMANCE OF DEVELOPMENTAL STUDENTS IN CREDIT COURSES

The statistics presented in this phase of the report were taken from the math brief entitled Developmental Follow-Up Study, Student Performance In The Complete Developmental Math Program, Fall 1975 - Fall 1977 and the English brief entitled Developmental Follow-Up Study, Student Performance in English 01 - Verbal Studies, Fall 1976 - Spring 1977.

The performance of developmental studies students in credit courses compared quite favorably to that of the non-developmental students in those courses. Developmental math students who completed the appropriate developmental math preparation performed, overall, at a higher level (seventy-seven percent receiving a grade of C or better) than the "Other" students (seventy-four percent receiving a grade of C or better) in credit math courses. Also, the developmental math students out-performed the non-developmental students in every credit math course.

The English 01 students also performed favorably as compared to the non-developmental students. Sixty-eight percent of the total number of English 01 students received a grade of C or better in their credit English 101 course as compared to seventy-three percent of the total number of non-developmental students enrolled in this same course. However, if we consider the group of students who passed the course (received a grade of D or better), the percentages increase to eighty-five percent for the developmental group and eighty-five percent for the non-developmental group. In considering the English 111 credit course, the percentages increased to eighty-eight percent for the developmental group and eighty-one percent for the non-developmental group. These percentages demonstrated quite a measure of success for both the developmental English department and their students. Because only those students with the most limited skills had been enrolled into English 01, the expectation of an A in credit English was extremely rare but the hope of a D was frequently the measure of attainable success and the most realistic goal.

Our research in the reading area was limited due to difficulty in acquiring data. Reading is a basic skill required for most credit courses; however, there were no identifying courses that could adequately evaluate a student solely on his performance in reading. In comparing the performance of the English 08 student to the "Other" students enrolled in the same course, we found that there were too many variables involved to actually determine a success rate based on his reading abilities alone. Therefore, it was not feasible in this study to isolate reading skills in credit courses.

The cumulative grade point average (GPA) was another possible indicator in comparing the overall performance of developmental to non-developmental students enrolled in credit courses. Our concern was to determine if the GPA would indicate that the race or sex composition of each of the two groups studied was directly related to the level of performance of either group in their credit courses. The findings of the study entitled The Retention and Performance of Developmental Students revealed that on the performance measures, cumulative GPA and number of credit hours completed, there was no pattern between race/sex and developmental status when considering the two groups, developmental and "Other."

Although separate analysis of each group revealed that there was no measurable sex/race distinction between the two groups in terms of GPA performance and credit hours completed, there were other factors that came to light. These factors were unique to the TNCC student body as a whole rather than as a developmental student versus the non-developmental student. When both groups are combined, the group of females (all races) and the group of Caucasians (both sexes) did display higher GPA's than their counterparts.

As a indicator unrelated to race or sex, what other information can be obtained from the GPA? Developmental student's GPA's and cumulative quarter hours completed were consistently below those of the "Other" students. While the average GPA of developmental students was below that of the "Other" students, it was, nevertheless, above a 2.0 and therefore reflects that, as a group, developmental students are progressing through their programs. Also, the difference in quarter hours completed was not very large, which indicates that developmental students carried class loads comparable to the "Other" group.

Phase IV
Developmental Graduate Student
1977

PERSISTENCE

A student who continues in the pursuit of a formal educational experience that may or may not lead to obtaining a degree, diploma, or certificate can be considered a persistent student. However, this group of students can be subdivided into two major categories, (1) the unsuccessfully persistent student and (2) the successfully persistent student. These two subgroups are defined as follows:

> The unsuccessfully persistent student endures but without significant change in his learning. In other words, this type of student will continue to enroll in classes but does not necessarily learn any new skills. He is enduring but does not show signs of any measurable progress through his program.
>
> The successfully persistent student continues steadily through his program. This type of student does make measurable progress toward his final goal and eventually succeeds.

The findings of this study indicate that the majority of developmental studies students was successfully persistent. The discussions of cohort survival in the brief Retention and Performance of Developmental Students point out that "While the average GPA of developmental students was below that of the non-developmental students, it was nevertheless above a 2.0 and therefore reflects that, as a group, developmental students are progressing through their programs."

The two separate briefs on student performance in developmental math and English, support the previous statement. Both studies indicate that fewer developmental students dropped out of their credit courses than their counterparts who were enrolled in these same courses. Therefore it follows that if the developmental student is adequately prepared, he will generally persevere through his credit program to its completion.

Again referring to the cohort study on student survival, we find that "Developmental and other students did differ substantially in their persistence and in their performance at the college. Developmental students persisted in greater proportions yet their percentage of graduates was lower." There are several reasons why the percentage of developmental students who graduated was lower than the total number of persistent students. Some of these reasons are listed below:

(1) A portion of these students are unsuccessfully persistent as previously defined. Due to the degree of the academic impairment of these students, it is not likely that these few students will complete their developmental studies program to go on to graduate.

(2) Of those students who are successfully persistent, some enter college with little intentions of seeking a degree and therefore cannot be expected to graduate. They may come for only one or two basic courses and stop attending once they achieve their educational objective.

(3) A portion of those who are successfully persistent are employed full time and enroll only on a part time basis. They will, therefore, take longer to graduate than the two years expected of a full time student. Therefore, if a student begins in developmental studies he will take even longer than this to graduate and, in effect, will be a statistic in future studies.

TNCC GRADUATE

Data involving the characteristics and attitudes of the general Thomas Nelson graduate has been compiled by the OIR prepared and published by the Office of Career Planning and Placement. The following statements are excerpts from the report A Placement Report of the 1977 Graduates of Thomas Nelson Community College.

The 1977 graduating class of Thomas Nelson Community College was of a median age of 32.2 with slightly more males (52.3%) than females (47.7%). The racial balance was predominently white (75.3%) with Black being the second most notable characteristic (22.6%).

Most students attended Thomas Nelson to prepare for a future job (42.3%) with improvement of skills (22.3%) and transferring to a four year school (26.8%) as being the next most chosen reasons. The median number of years between matriculation and graduation at TNCC was 3.97 for 1976-77 graduates. Over 40% of the graduates received some form of developmental studies.

Developmental Studies Graduate

The Thomas Nelson Community College Graduate Follow-Up One Year questionnaire (page 27) was mailed to students who graduated from TNCC between Summer 1976 and Summer 1977. Appropriate data was drawn and analyzed in order to ascertain more specific information concerning the characteristics and attitudes of developmental studies graduates in comparison to those of the general TNCC graduate. The following questions were analyzed:

(1) What percent of the graduates had previous developmental preparation?

(2) What were the basic educational attitudes of the developmental studies graduate?

(3) What were the basic employment attitudes and outlook of the developmental studies graduate?

Educational Attitudes

The findings point out that of the total number of graduates responding to the questionnaire, 40% indicated they had had some developmental preparation. This is consistent with the findings of the placement report of the 1977 graduates mentioned earlier.

50% of the developmental graduates listed "improvement of existing job skills" or "preparation for job to be obtained" as their primary objective in attending Thomas Nelson. 33% listed "university transfer credit" as their primary objective. 70.5% of the graduates had changed curriculums once and 29.5% shifted curriculums by changing their majors more than once. However, most graduates felt that their course work prepared them adequately for continuing their education. After graduation, 76.3% of the developmental group enrolled into either Christopher Newport College or Old Dominion University.

Employment Attitudes:

The majority of the developmental graduates (69.4%) felt that their present occupation related to the courses they had completed at TNCC. One-half the graduates were employed full time after graduation and 36% more continued their education at a higher level. Neither group rated availability of jobs in their occupational area as very good.

Of those employed full time, 62.3% had incomes below $10,000 and 9.8% had incomes of $14,000 or more.

CONCLUSIONS

The developmental studies graduate statistically demonstrated the same characteristics, aspirations, and attitudes as the typical TNCC graduate. Both groups chose preparation for job as their primary reason for attending Thomas Nelson and transfer credit as secondary. Christopher Newport College and Old Dominion University were the favorite of both groups in terms of student enrollment. The majority of both groups were employed full time and had incomes below $10,000.

Two out of every five of the students who graduated from Thomas Nelson were previous developmental studies students. These students began their educational endeavors with high aspirations but limited academic preparation. It was highly probable that without developmental courses they would not have made it through their programs and accomplished their goals. Yet with developmental preparations these students successfully persisted through their courses, accomplished their individual objectives, and subsequently graduated from TNCC. By participating in the developmental program, which was structured around his individual needs and his particular competency level, each student was given the opportunity to successfully enter his desired curriculum. Not only are they given the opportunity but a high percentage of these students participate in the developmental program and are successful.

We feel that the developmental program is a major factor contributing to the success of these underprepared students. Our developmental programs are successful and do stand as alternatives for the academically impaired student. With 40% of TNCC graduates as previous developmental students, we have demonstrated one facet of our ability to administer programs capable of serving the needs of the heightened expectations of an extremely heterogenous student population at TNCC.

SUMMARY

The majority of the students who initially enrolled in a developmental studies course successfully completed the course. Once these students entered their credit math or English course they performed most favorably as compared to the non-developmental students in these credit courses. The GPA of developmental students, while below that of the "other" students, was above a 2.0 thus reflecting their advancement through their credit programs. Evidence of this is also supported by the fact that forty percent of the 1977 graduates had previous developmental preparation.

These findings indicate that our developmental programs have been successful over the period of this study. Our programs have provided a positive academic environment for developmental students. The three programs--English, reading, and mathematics--function as a unit with a commonality of purpose centering on the student. The major concern is the student and his total development including his self-image and self-motivation.

Since the faculty member plays a key role in the development of the developmental studies student, the entire division takes part in the initial screening of applicants and prospective faculty are interviewed by each division member. The recommendation for hire is given by the department where the vacancy occurs. Prospective faculty members who are trained in their field, who have had experience in teaching basic skills, and who are dedicated to the developmental studies philosophy are given first consideration.

The following recommendations have evolved from this study.

RECOMMENDATIONS

1. A number of students enrolled in self-paced courses, completed the course early in the quarter, and continued on to satisfy all the objectives of the subsequent course as well. These students were awarded a "credit by examination" for the subsequent course. These grades were not filed on the computer data banks thus rendering some students records incomplete. We recommend that these grades be filed on the system along with the student's other course grades. In the event this is not possible, we recommend that our present system of recordkeeping for the developmental studies division be reviewed in order to provide a more efficient means of maintaining records of students who received credit by exam grades.

2. For both credit and developmental studies courses, learning objectives tend to change from year to year, and in some cases, quarter to quarter. Therefore, the committee recommends that the developmental studies division continue to articulate with the faculty teaching the credit courses to keep abreast of their current philosophies and current course objectives in regard to student preparation.

3. To study the effect of changes in materials, policies, and procedures in developmental studies, the committee had to rely on individual faculty member's copies of historical information. If it were not for these personal records, this primary source of information would have been lost. We recommend that the division maintain copies of all historical documents, research, etc. in a central file.

4. In order to ascertain information on the number of students who successfully persist through their programs to graduation, the committee obtained data from specific items on the "1977 Graduate Follow-Up One Year" questionnaire. Presently this form has been revised, leaving out essential information necessary for future research in developmental studies. We recommend that the division chairperson articulate with the Office of Career Planning and Placement in reinstating these items on the questionnaire.

5. The Developmental Studies Division is in a continuum of revising curriculae, updating materials, and providing alternative teaching approaches. We recommend that the division maintain a standing committee to actively continue to assess the effectiveness of our programs by this, or a similar, evaluation process and to revise the evaluation instrument.

6. Finally, the committee recommends that each department within the Developmental Studies Division schedule a meeting with discussions centering on the results of this study. From these discussions should be generated an appropriate course of action, within that department, to not only maintain and/or improve the present level of student success and teacher effectiveness but also to increase the rate of student retention in that department.

7. It is also recommended that the developmental studies division chairperson oversee and direct the activities of these departments towards accomplishing the aforementioned objectives.

Thomas Nelson Community College
P. O. Box 9407 • Hampton, Virginia 23670
Phone (804) 826-4800

Date:

Dear _____:

This questionnaire is an effort to improve instruction at Thomas Nelson Community College. A committee of faculty members from Developmental Studies has been formed to study student performance in developmental courses. Your support and response is essential to the success of the project.

It only takes about 5 minutes of your time to complete this questionnaire. Please help us by answering the following questions as honestly and completely as possible. Please do not put your name on this questionnaire. All information will be kept in the strictest confidence.

Please complete all parts of the survey and return it in the enclosed, self-addressed stamped envelope.

Thank you so much for your assistance.

Sincerely,

Follow-Up Study Committee
Developmental Studies

bc5/1

Enclosures

Equal Opportunity Employer

I. SELF-ASSESSMENT

Please describe your experience in Developmental Studies by answering questions 1 - 3.

1. Please check the main reason you attended T.N.C.C. (check one)

_____ for personal interest or self-improvement

_____ to improve my job skills

_____ to obtain credit towards a certificate program, diploma, two-year degree, or transfer credit

_____ to make use of veteran benefits or other grants

_____ other; specify here _____

2. Even though you were not successful in Developmental Studies, do you feel that you still learned from the course(s) that you took?

_____ yes _____ no

If "no", skip to Item #3.

Check the appropriate statement. (You may check more than one.)

_____ what I learned from the course helped me in my job.

_____ what I learned from the course helped me in other courses

_____ as a result of taking the course, I have a more positive feeling towards this course of study.

_____ I felt the course helped me to improve myself.

3. What personal factor prevented you from completing your developmental course?

_____ I felt that I carried too many credits

_____ I felt that I had poor study habits

_____ I did not study or work hard enough

_____ I did not have enough self-confidence

_____ I was over confident because I thought the course would be easy.

_____ there was too much material to cover

_____ I felt that the Developmental Studies Program was not helping me

_____ I could not keep up in the course because of personal problems

_____ other reasons; specify here _____

II. ACADEMIC FACTORS

Now that you have completed Section I on Self-Assessment, please answer questions 4 through 6. These questions deal with course content only. They refer to reasons why you were unsuccessful in completing the course due to possible weaknesses in the course itself.

4. English 08 Reading Improvement

Did you receive a grade of "S" in English 08 (Reading Improvement

_____ no _____ yes

If "yes", skip to item #5

Check the reason(s) why you didn't receive an "S" grade in English 08.

_____ I could not get along with the instructor

_____ the grading system was unfair

_____ the course materials didn't help me

_____ due to the amount of material covered, this should have been a two quarter course

_____ there was too much testing in the course

_____ high school did not prepare me for this course

_____ other reasons; specify here _____

5. English 01 - Verbal Studies

Did you receive a grade of "S" in English 01 (Verbal Studies)?

_____ no _____ yes

If "yes" skip to Item #6.

Check the reason(s) why you didn't receive an "S" grade in English 01.

_____ I could not get along with the instructor

_____ the grading system was unfair

_____ the course didn't help me

_____ I felt that one quarter should have been devoted to paragraph writing and another quarter to grammar

_____ high school did not prepare me for this course

_____ I felt there was too much material for a one quarter course

_____ other reasons; specify here _____

6. Developmental Math

Did you receive a grade of "S" in Developmental Math during your last quarter at Thomas Nelson?

_____ no _____ yes

If "yes", skip to Item #7.

Check the course you did not receive a grade of "S" in your last quarter at Thomas Nelson (check only one).

_____ Math 01 (Basic Arithmetic and Algebra)

_____ Math 05 (Basic Arithmetic)

_____ Math 06 (Basic Algebra I)

_____ Math 07 (Basic Algebra II)

_____ Math 08 (Basic Geometry)

_____ Math 33 (Algebra III)

_____ Math 09 (Trigonometry)

Was the course self-paced (individualized)?

_____ yes _____ no

Check the reason(s) why you did not receive a grade of "S".

_____ I could not get along with the instructor

_____ the grading system was unfair

_____ the course materials were not helpful to me

_____ there was too much material to cover

_____ the lecture method was not what I wanted

_____ the self-paced method was not what I wanted

_____ other reasons; specify here _____

III. EXTERNAL FACTORS

Question 7 deals with those reasons for dropping out of school that are not associated with Thomas Nelson.

7. From the following list, check the one major reason you dropped out of school and did not complete your Developmental Studies course(s).

_____ transportation was a problem

_____ the courses that I did complete were the only ones I really wanted or felt I needed

_____ my job was too demanding

_____ I moved from the area

_____ health problems interferred with my study habits

_____ family obligations interferred with my progress

_____ a job opportunity came along so I quit to take it

_____ I decided that college was not for me

_____ I was suspended from TNCC

_____ my schedule prevented me from continuing in the course

_____ I didn't finish the course since the portion that I did learn was all that I needed for my job.

_____ financial benefits ran out (VA, BEOG, etc.)

_____ other; specify here _____

IV. PERSONAL INFORMATION

Please check the appropriate lines

Sex

_____ Male

_____ Female

Marital Status

_____ Married

_____ Single

_____ Other

Age

_____ 21 or under

_____ 22 - 44

_____ 45 - 59

_____ 60 or over

Veteran

_____ Yes

_____ No

Education

_____ Never attended Jr. High or High School

_____ Received a G.E.D. (General Education Diploma)

_____ High School Graduate

_____ Attended college

Employment

_____ Part-Time (less than 35 hours a week)

_____ Full-Time (35 hours or more a week)

_____ Unemployed

This completes the questionnaire. Thank you for your time and interest. Please return the questionnaire in the self-addressed, stamped envelope provided. Contact the college if we can be of any assistance in helping you continue your education.

THOMAS NELSON COMMUNITY COLLEGE
GRADUATE FOLLOW-UP
1 YEAR

Please make corrections to the information below if necessary.

(checked questions indicate those items in which developmental were distinguished from non-developmental)

BEGIN HERE

Please check the lines below as appropriate. This information needed for equal opportunity education and employment reporting.

Ethnic Group [16]
1 ___ White, not of Hispanic Origin
2 ___ Hispanic
3 ___ Asian or Pacific Islander
4 ___ Black, not of Hispanic Origin
5 ___ American Indian or Alaska Native

Sex [17]
1 ___ Male
2 ___ Female

Married Status [18]
1 ___ Married
2 ___ Single
3 ___ Other

PLEASE CHECK APPROPRIATE BLOCK(S) WITHIN EACH CATEGORY BELOW.

SECTION A — Everyone should answer this section

1 Did you enroll in any **Developmental Studies** courses while attending TNCC? [19]

1 ___ Yes; Which ones?
- [20] 1 ___ Reading Improvement (English 08)
- [21] 1 ___ Verbal Studies (English 01)
- [22] 1 ___ Basic Arithmetic (Math 05)
- [23] 1 ___ Algebra I (Math 06)
- [24] 1 ___ Algebra II (Math 07)
- [25] 1 ___ Geometry (Math 08)
- [26] 1 ___ Algebra III (Math 33)
- [27] 1 ___ Trigonometry (Math 09)

2 ___ No

2 What was your **PRIMARY** objective in attending our two-year college? [28]
1 ___ Improvement of existing "job skills"
2 ___ Preparation for "job to be obtained"
3 ___ University transfer credit
4 ___ Personal interest
5 ___ Other (describe) _____

3 Which one of the below best describes your present status? [29]
1 ___ Employed, full-time
2 ___ Employed, part-time
3 ___ Unemployed, seeking employment
4 ___ Military, full-time active duty
5 ___ Continuing education at higher level
6 ___ Homemaker
7 ___ Unavailable for employment (describe) _____

4 Please rate those courses in your major field of study according to how well they fulfilled your own individual needs.

		Very Good 1	Good 2	Neutral 3	Poor 4	Very Poor 5
Quality of instruction	[30]	___	___	___	___	___
Grading/Testing	[31]	___	___	___	___	___
Instructor interest	[32]	___	___	___	___	___
Content of course(s)	[33]	___	___	___	___	___
Instructional media	[34]	___	___	___	___	___

5 Please rate only those college services below that you have utilized according to how well they fulfilled your own individual needs.

		Very Good 1	Good 2	Neutral 3	Poor 4	Very Poor 5
Financial Aid	[35]	___	___	___	___	___
Counseling	[36]	___	___	___	___	___
Placement assistance	[37]	___	___	___	___	___
Course advisement	[38]	___	___	___	___	___
Tutoring Services	[39]	___	___	___	___	___
Veterans Services	[40]	___	___	___	___	___
Learning lab	[41]	___	___	___	___	___
Student activities	[42]	___	___	___	___	___
Library services	[43]	___	___	___	___	___

SECTION B — If you have re-enrolled in a college since your attendance at TNCC, please answer this section.

1 Indicate below the name of the institution in which you enrolled. [44]
01 ___ Christopher Newport College
02 ___ Clinch Valley College
03 ___ George Mason University
04 ___ Longwood College
05 ___ Madison College
06 ___ Mary Washington College
07 ___ Norfolk State College
08 ___ Old Dominion University
09 ___ Radford College
10 ___ Richard Bland College
11 ___ University of Virginia
12 ___ Virginia Commonwealth University
13 ___ Virginia Military Institute
14 ___ VPI - SU
15 ___ Virginia State College
16 ___ William and Mary
17 ___ Other institution. Please specify: _____

2 Did you have problems transferring to the college indicated above? [45]
1 ___ Yes; what?
- [46] 1 ___ Transferring credit hours
- [47] 2 ___ Transcript problems
- [48] 3 ___ Admission problems
- [49] 4 ___ Other (describe) _____

2 ___ No

OVER PLEASE!

3 Are you pursuing the same curriculum as you did at TNCC?

[50] 1 ____ Yes
2 ____ No; If no, what is your curriculum? _____

4 If you are currently enrolled in college, please indicate your current status at the college indicated above.

[51] 1 ____ Part-time student
2 ____ Full-time student

5 How well did the courses you completed at our college prepare you for continuing your education?

1 ____ My preparation was excellent.
2 ____ My preparation was satisfactory.
[52] 3 ____ Good in some areas only.
4 ____ Fair, but all areas could have been better.
5 ____ My preparation was inadequate.

SECTION C If you have been employed since you left our college, please answer this section.

1 Please complete the information below regarding your employment.

[53-55] _____ Job Title

[56-63] _____ Name of Employer

_____ Street Address of Employer

_____ City of Employment

2 If you are currently employed, is your present occupation related to the courses you have completed at our college?

[64] 1 ____ Yes, directly related
2 ____ Yes, closely related
3 ____ No. If no, please check the reason which applies.

01 ____ Transferred to a four-year college
02 ____ Not sufficiently qualified for a job in my field of college preparation
03 ____ Preferred to work in another field
04 ____ Found better paying job in another field
05 ____ Could not find a job in field of preparation
[65-66] 06 ____ Worked previously in field of preparation, but changed
07 ____ I became disabled and cannot do this type of work
08 ____ I took the course for personal or recreational purpose only (not under the G.I. Bill)
09 ____ I became pregnant, causing me to forego a new career
10 ____ My marital status changed causing me to forego a new career
11 ____ I was unwilling to move to a new locality to take an available job
12 ____ Other. Please state. _____

3 How would you rate the training you received at our college in relation to its usefulness to you in performing your job?

[67] 1 ____ Very good
2 ____ Good
3 ____ Neutral
4 ____ Poor
5 ____ Very poor

4 Please check below if the course(s) you took at our college helped you in your occupational area in any of the following ways.

[68] 1 ____ Helped to obtain job
[69] 1 ____ Helped performance on present job
[70] 1 ____ Helped advance on present job
[71] 1 ____ None of the above
[72] 1 ____ Other (describe) _____

5 If you are employed full-time, please indicate your approximate annual salary range (gross) below. This information, when combined with other members of your graduating class, will provide valuable information to other individuals in career planning.

[73] 1 ____ Up to $4999
2 ____ $5000 to $6999
3 ____ $7000 to $8999
4 ____ $9000 to $9999
5 ____ $10,000 to $10,999
6 ____ $11,000 to $11,999
7 ____ $12,000 to $12,999
8 ____ $13,000 to $13,999
9 ____ $14,000 and up

6 Were you employed in your occupational area PRIOR to enrolling in the courses completed at our college?

[74] 1 ____ Yes
2 ____ No

7 How would you rate the availability of jobs in your occupational area?

[75] 1 ____ Very good
2 ____ Good
3 ____ Neutral
4 ____ Poor
5 ____ Very poor

SECTION D Everyone should answer this section.

1 How do you see the courses completed at our college in terms of your career plans?

[76] 1 ____ of immediate, direct benefit
2 ____ of long term, direct benefit
3 ____ of indirect benefit
4 ____ of no benefit

2 Are you interested in taking other courses at our college? You may include courses not presently offered by our college.

[77] 1 ____ No
2 ____ Yes; What course(s) _____

3 Approximately how many times did you change your curriculum while enrolled at TNCC? [78] _____

4 I would ____ 1 would not ____ 2 be interested in Alumni Affairs. [79]

5 We would appreciate any comments regarding how we could improve the program you have completed and/or services we have provided. Use back of college letter if additional space is needed.

Thank you for assisting us. Please return this form in the pre-paid envelope as soon as possible.

DEVELOPMENTAL FOLLOW-UP STUDY

RETENTION AND PERFORMANCE OF DEVELOPMENTAL STUDENTS

FALL 1974 - FALL 1977

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June, 1979

Developmental Follow-up Study
Retention and Performance of Developmental Students
Fall 1974 - Fall 1977

INTRODUCTION

The following deals with the retention and performance of students in developmental studies as compared to other students enrolled at TNCC. The major concern was to determine whether the survival rate, the grade point average (GPA), and the rate of graduation of developmental students varied greatly from those of other students. The impact of race and sex as intervening variables was also of interest.

PROCEDURE

The sample consisted of all first-time students enrolled in the Fall Quarter, 1974. Developmental students were defined as all first-time students enrolled in at least one of the following courses: English 01, English 08, Math 05, Math 06, Math 07, Math 08, and Math 33. "Other" students were simply the remaining students in the sample.

These students were tracked from the Fall Quarter, 1974, through the Fall Quarter, 1977. For each fall quarter, and for the Winter Quarter, 1975, the number of students enrolled, the average cumulative GPA of those students, and the average cumulative quarter hours completed by those students were reported by developmental status and by race and sex. Those students who had graduated as of Fall Quarter, 1977, were also reported by developmental status and by race and sex.

The impact of race and sex on developmental status, and the impact of developmental status on GPA, were explored through a Chi square test of independence. Chi squares were calculated for each fall quarter in the study and for the graduates as of the Fall Quarter, 1977.

FINDINGS

Of the 1,792 first-time students who enrolled at TNCC in the Fall Quarter, 1974, 434 were excluded from the study because of invalid grade data. One hundred forty-five developmental students and 289 of the "other" students were excluded, leaving a total of 1,358 first-time students -- 380 developmental students and 978 of the "other" students.

Cohort Survival

Sixty-five percent of the sample reenrolled in the Winter Quarter, 1975. However, the proportion of the returning developmental students was substantially higher (73%) than that of the returning "other" students (62%). This relationship persisted in all subsequent quarters in the study. By the Fall Quarter, 1977, 15% of the sample were still enrolled -- 18% of the developmental students and 14% of the "other" students.

Performance

Cumulative quarter hours completed and GPA were the performance indicators in the study. Developmental students had completed fewer quarter hours and had earned lower grade point averages than the "other" students in every quarter, Winter, 1975 through Fall, 1977. However, the difference between the two groups in average cumulative quarter hours was small.

A Chi square test of independence was used to see if the relationship between developmental status and GPA was statistically significant. For each quarter of study, the test yielded statistically significant Chi squares at the .05 confidence level.

Graduation

As of Fall Quarter, 1977, 109 of the 1,358 students had graduated (8%). A somewhat larger percentage of the "other" students graduated (9%) than developmental students (6%). These findings are consistent with those for GPA and quarter hours completed but the nine quarters in the study do not allow enough time for the adult, part-time student to graduate. Therefore, these data are incomplete as indicators of program completion. With respect to type of awards received, 28% of the "other" graduates received AA and As degrees in contrast to 17% of the developmental graduates. Developmental graduates were more likely than "other" graduates to receive AAS degrees, diplomas, or certificates.

Impact of Race and Sex

The relationship between sex/race and developmental status on persistence and performance measures was somewhat complex. In each quarter, Fall 1974 through Fall 1977, two groups, males (all races) and blacks (both sexes), constituted a larger proportion of developmental than the "other" students. A Chi square test of independence was used to evaluate the relationship between sex/race and developmental status. For each quarter the test yielded statistically significant Chi squares at the .05 confidence level.

Similarly, men made up a larger proportion of developmental graduates (61%) than the "other" graduates (42%), and blacks made up a large proportion of developmental graduates (26%) than the "other" graduates (20%). However, tests of independence between sex/race and developmental status for graduates failed to yield statistically significant Chi squares (.05 confidence level).

The low Chi squares for graduates indicate that the proportion of men and the proportion of blacks among developmental graduates is not all that different (statistically) from these proportions for the"other" graduates. The reason why the larger proportion of men and blacks among developmental graduates, as opposed to the "other" graduates, is not statistically significant is that men and blacks are less likely to graduate than their counterpoarts. Hence, much of the race and sex differences disappear for graduates thereby making developmental and "other" graduates similar.

With respect to sex and race and the performance measures, the group of females (all races) and the group of Caucasians (both sexes) tended to have higher GPA's while the group of males and the group of blacks tended to complete more quarter hours. This pattern generally held for developmental and the "other" students, Fall Quarter, 1975 through Fall Quarter, 1977, with respect to GPA but not for cumulative quarter hours completed.

SUMMARY

Before the findings are summarized, a note of caution should be offered in interpreting the data, especially the data on persistence. A significant percentage of students entering the college do not seek degrees, and therefore, cannot be expected to graduate. They may come for only one or two courses and stop attending once they achieve their educational objective. Moreover, a large percentage of students are employed full-time and thus enroll on a part-time basis. They will, therefore, take longer to complete a degree than the two years expected of a full-time student. They may also be required to drop out when family and job responsibilities require it, only to enroll in some subsequent quarter. Thus it is important to use extreme caution when labeling students as "failures" when persistence is the variable. On the other hand, caution should also be exercised when labeling as "successful" those students who continue to enroll in classes but do not necessarily learn new skills.

Developmental and the "other" students did differ substantially in their persistence and in their performance at the college. Developmental students persisted in greater proportions yet their percentage of graduates was lower. The lower percentage of graduates for developmental students can be partially explained by the fact that their developmental course work typically delays their curriculum progress. Hence it could take them longer to graduate.

Developmental students' GPA's and cumulative quarter hours completed were consistently below those of the "other" students. While the average GPA of developmental students was below that of the "other" students, it was, nevertheless, above a 2.0 and therefore reflects that, as a group, developmental students are progressing through their programs. Also, the difference in quarter hours completed was not very large.

Race and sex were clearly related to developmental status. The group of males and the group of blacks typically made up a larger proportion of developmental than "other" students. On the performance measures, (cumulative GPA and number of credit hours completed), there was no pattern between race/sex and developmental status when considering the two groups, developmental and "other." However, when both groups are combined, the group of females (all races) and the group of Causasians (both sexes) had higher GPA's.

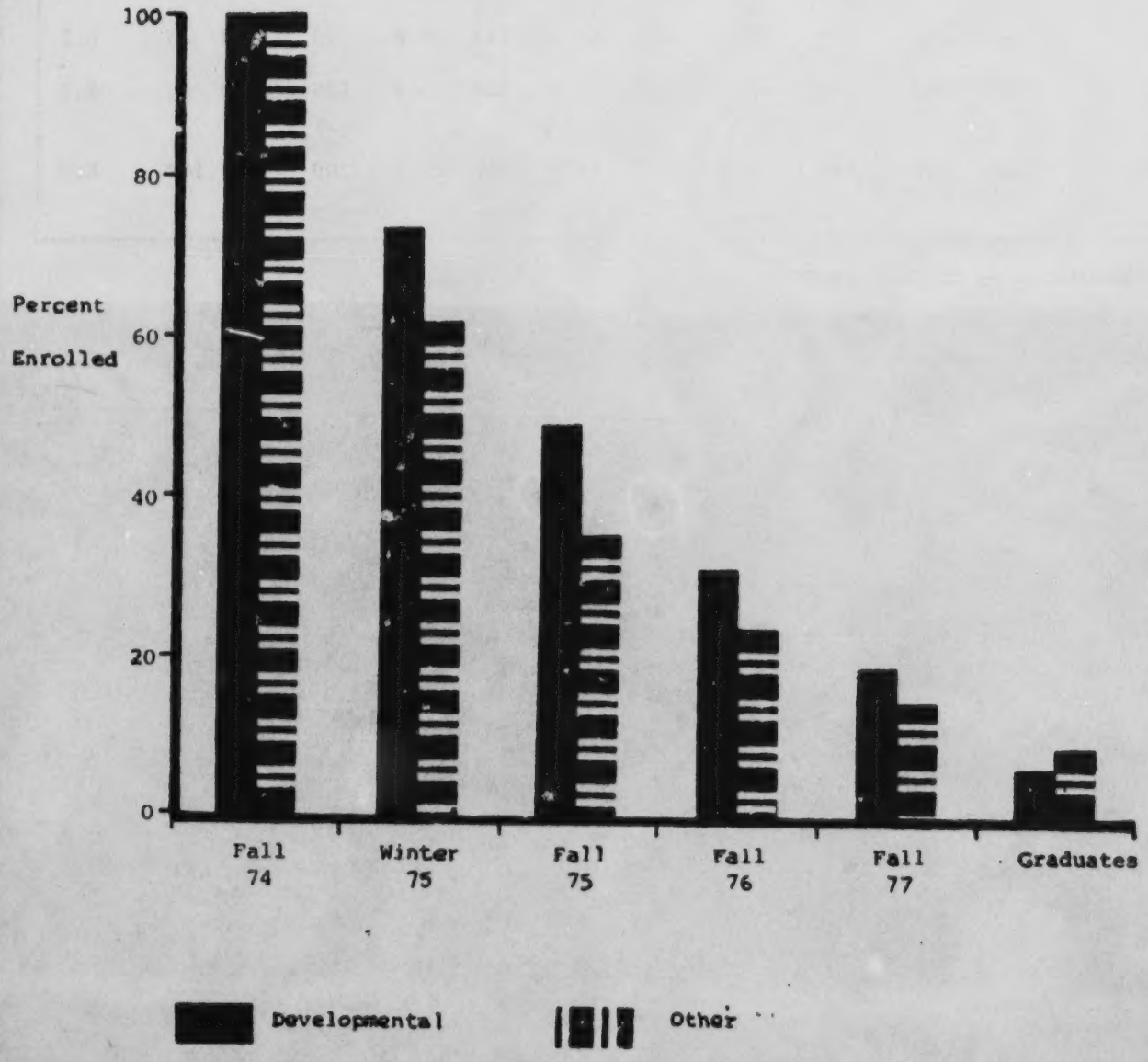
FIRST-TIME STUDENTS FALL 1974
COHORT SURVIVAL

	Fall 74		Winter 75		Fall 75		Fall 76		Fall 77		Graduates*	
	#	%	#	%	#	%	#	%	#	%	#	%
Devel.	380	100	279	73.4	185	48.7	117	30.8	70	18.4	23	6.1
Other	978	100	602	61.6	342	35.0	229	23.4	139	14.2	86	8.8
Total	1358	100	881	64.9	527	38.8	346	25.5	209	15.4	109	8.0

*Graduates as of Fall 1977

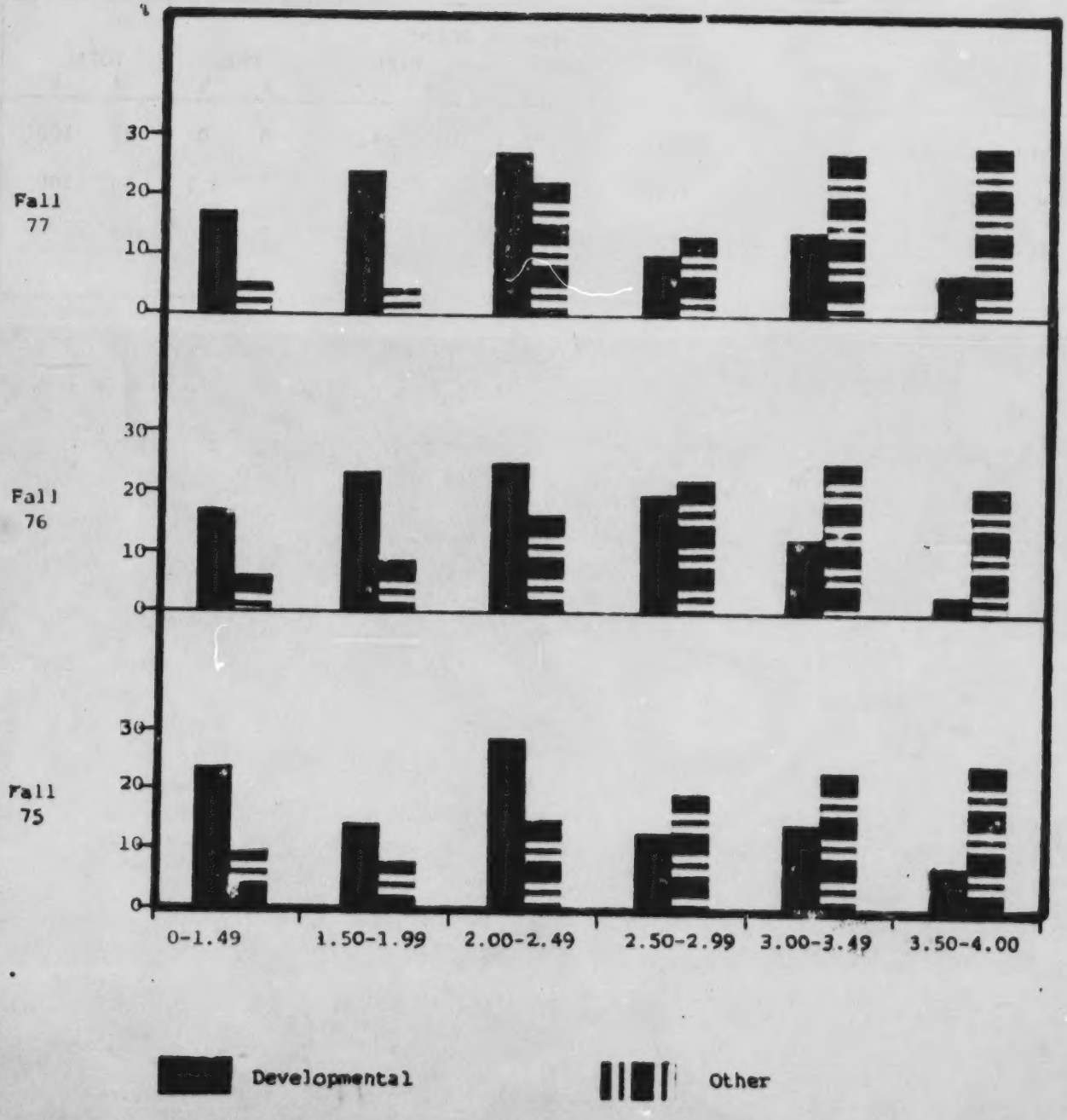
FIRST-TIME STUDENTS, FALL 1974

COHORT SURVIVAL



FIRST-TIME STUDENTS, FALL 1974

DISTRIBUTION OF CUMULATIVE GPA



FIRST-TIME STUDENTS FALL 1974
GRADUATES BY TYPE OF AWARD

	Type of Award											
	AA		AS		AAS		DIPL		CERT		TOTAL	
	#	%	#	%	#	%	#	%	#	%	#	%
Devel.	0	0	4	17.4	18	78.3	1	4.3	0	0	23	100
Other	3	3.5	21	24.4	52	60.5	3	3.5	7	8.1	86	100
Total	3		25		70		4		7		109	

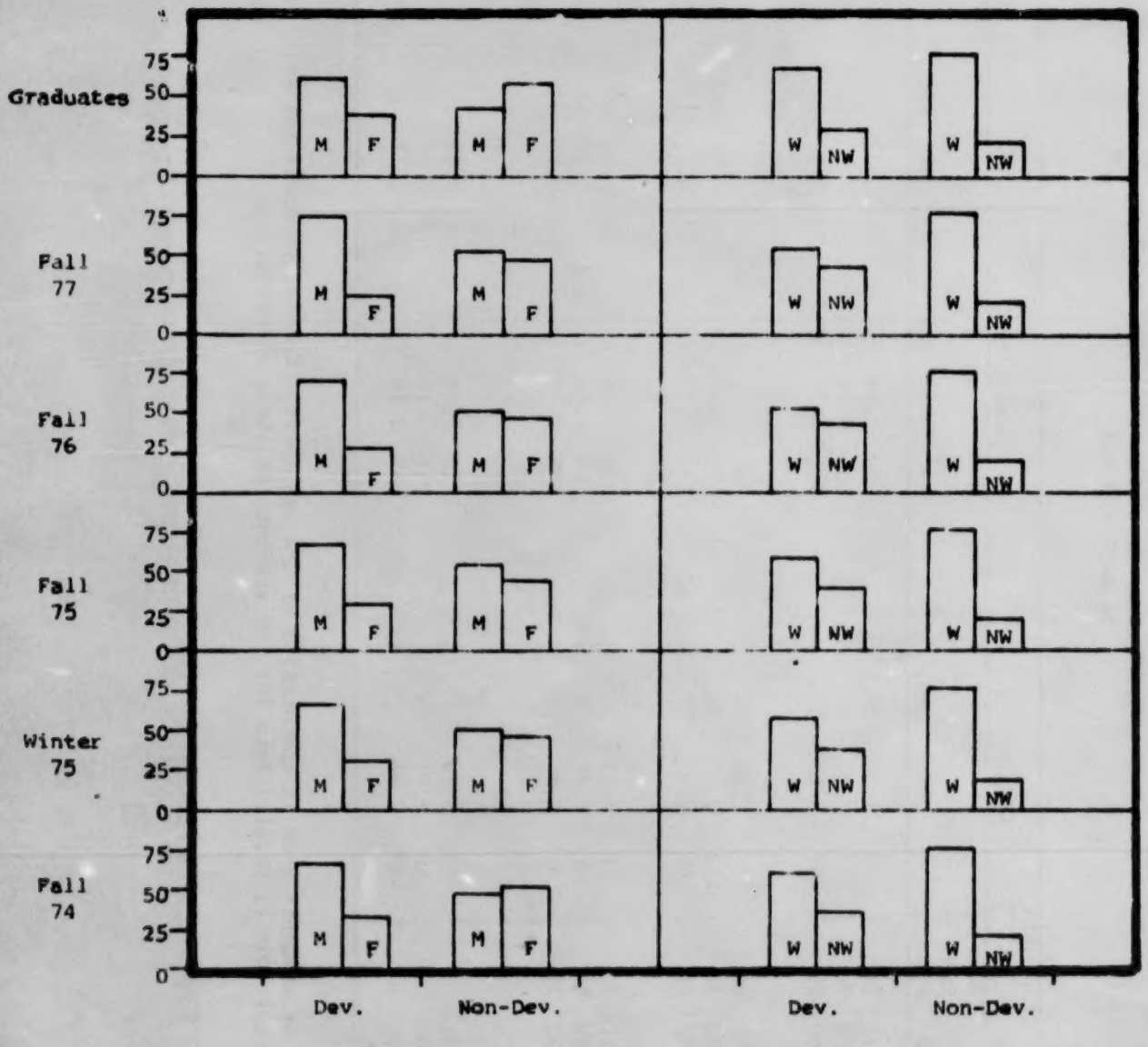
FIRST-TIME STUDENTS FALL 1974
GPA AND AVERAGE CUMULATIVE HOURS
BY RACE AND SEX

	SEX						RACE								
	Male			Female			Caucasian			Black			Others		
	#	GPA	Aver. Cum. Hrs.	#	GPA	Hrs.	#	GPA	Hrs.	#	GPA	Hrs.	#	GPA	Hrs.
Fall 75[1]															
Devel.	92	2.18	23	50	1.99	25	85	2.24	26	49	1.92	20	8	1.99	23
Other	138	2.70	36	118	2.85	39	201	2.90	38	45	2.20	35	10	2.72	35
Total	230	2.49	30	168	2.60	35	286	2.70	34	94	2.06	27	18	2.39	28
Fall 76															
Devel.	84	2.10	40	33	2.09	43	64	2.29	42	47	1.81	38	6	2.24	43
Other	119	2.82	49	110	2.27	36	177	2.97	42	46	2.18	44	6	2.53	31
Total	203	2.52	45	143	2.62	37	241	2.79	42	93	1.99	41	12	2.38	37
Fall 77															
Devel.	52	2.12	42	18	2.21	36	39	2.36	34	29	1.91	50	2	1.25	28
Other	73	2.80	55	66	2.98	29	109	3.04	45	27	2.29	38	3	2.55	25
Total	125	2.52	50	84	2.81	30	148	2.86	42	56	2.10	44	5	2.03	26
Graduates															
Devel.	14	2.72		9	2.59		16	2.80		6	2.43		1	1.91	
Other	36	3.06		50	3.02		67	3.17		17	2.62		2	2.40	
Total	50	2.96		59	2.96		83	3.10		23	2.57		3	2.23	

[1]Total number of students used in computation of GPA and Average Cumulative Hours for Fall 1975 is less than that in the sample due to invalid data for 129 students on these elements.

FIRST-TIME STUDENTS, FALL 1974

DEVELOPMENTAL STATUS BY SEX AND RACE



FIRST-TIME STUDENTS FALL 1974
GPA AND AVERAGE CUMULATIVE HOURS
FALL 1975-77

	Fall 75[1]			Fall 76			Fall 77			Graduates[2]	
	#	GPA	Avr. Cum. Hrs.	#	GPA	Avr. Cum. Hrs.	#	GPA	Avr. Cum. Hrs.	#	GPA
Devel.	142	2.11	24	117	2.09	41	70	2.14	41	23	2.67
Other	256	2.77	37	229	2.80	42	139	2.89	43	86	3.04
Total	398	2.54	32	346	2.56	42	209	2.64	42	109	2.96

[1]Total number of students used in computation of GPA and Average Cumulative Hours for Fall 75 is less than that in the sample due to invalid data for 129 students on those elements.

[2]Graduates as of Fall 1977.

	0.00 -1.49		1.50 -1.99		2.00-2.49		2.50-2.99		3.00-3.49		3.50-4.00		Total	
	#	%	#	%	#	%	#	%	#	%	#	%	#	%
Fall 75[1]*														
Devel.	33	23.2	20	14.1	40	28.2	18	12.7	20	14.1	11	7.7	142	100
Other	24	9.4	20	7.8	38	14.9	50	19.5	59	23.0	65	25.4	256	100
Total	51	14.3	40	10.1	78	19.6	68	17.1	79	19.8	76	19.1	398	100
Fall 76**														
Devel.	20	17.1	27	23.1	29	24.8	23	19.6	14	12.0	4	3.4	117	100
Other	13	5.7	29	8.7	37	16.2	51	22.3	58	25.3	50	21.8	229	100
Total	33	9.5	47	13.6	66	19.1	74	21.4	72	20.8	54	15.6	346	100
Fall 77***														
Devel.	12	17.1	17	24.3	19	27.1	7	10.0	10	14.3	5	7.2	70	100
Other	7	5.0	6	4.3	31	22.3	18	13.0	38	27.3	39	28.1	139	100
Total	19	9.1	23	11.0	50	23.9	25	12.0	48	23.0	44	21.0	209	100

[1]Total number of students used in computation of GPA and Average Cumulative Hours for Fall 75 is less than that in the sample due to invalid data for 129 students on these elements.

Chi Square Test of Independence

* H_o rejected. $X^2 = 41.06$, df = 5, confidence level = .05

** H_o rejected. $X^2 = 49.66$, df = 5, confidence level = .05

*** H_o rejected. $X^2 = 38.55$, df = 5, confidence level = .05

FIRST-TIME STUDENTS, FALL 74 COHORTS SURVIVAL BY RACE AND SEX

	Total		Sex				Race					
			Male		Female		Caucasian		Black		Other	
Fall 74	#	%	#	%	#	%	#	%	#	%	#	%
Devel.	380	100	1 252	66.3	128	33.7	7 232	61.1	132	34.7	16	4.2
Other	978	100	469	48.0	509	52.0	763	78.0	175	17.9	40	4.1
Total	1358	100	721	53.0	637	4710	995	73.3	307	22.6	56	4.1
Winter 75												
Devel.	279	100	2 189	6717	90	32.3	8 167	59.9	101	36.2	11	3.9
Other	602	100	315	52.3	287	47.7	471	7812	105	17.5	26	4.3
Total	881	100	504	5712	377	4218	638	7214	206	23.4	37	4.2
Fall 75												
Devel.	185	100	3 126	68.1	59	31.9	9 108	58.4	69	37.3	8	4.3
Other	342	100	186	54.4	156	45.6	266	77.6	65	19.0	11	3.2
Total	527	100	312	59.2	215	40.5	374	71.0	134	25.4	19	3.6
Fall 76												
Devel.	117	100	4 84	71.8	33	28.2	10 64	43.7	47	40.2	6	5.1
Other	229	100	119	52.0	110	48.0	177	77.3	46	20.1	6	2.6
Total	346	100	203	58.7	143	41.3	241	69.6	93	26.9	12	3.5
Fall 77			5									
Devel.	70	100	52	74.3	18	25.7	11 39	55.7	29	41.4	2	2.9
Other	139	100	73	52.5	66	47.5	109	78.4	27	19.4	3	2.2
Total	209	100	125	59.8	84	40.2	148	70.8	56	26.8	5	2.4
Graduates												
Devel.	23	100	6 14	60.9	9	39.1	1216	69.6	6	26.1	1	4.3
Other	86	100	36	41.9	50	58.1	67	77.9	17	19.8	2	2.3
Total	109	100	50	45.9	59	54.1	83	76.1	23	21.1	3	2.8

* Row Percentages

Chi Square Test of Independence

1 reject H_o, $X^2 = 36.69$
2 reject H_o, $X^2 = 18.7$
3 reject H_o, $X^2 = 9.23$
4 reject H_o, $X^2 = 12.00$
5 reject H_o, $X^2 = 8.94$
6 accept H_o, $X^2 = 1.99$
7 reject H_o, $X^2 = 39.87$
8 reject H_o, $X^2 = 32.16$
9 reject H_o, $X^2 = 21.36$
10reject H_o, $X^2 = 19.27$
11reject H_o, $X^2 = 12.7$
12accept H_o, $X^2 = 1.27$

Confidence level = .05, df = 1

Note: For this analysis, black and other combined within race.

FIRST-TIME STUDENTS FALL 1974
COHORT SURVIVAL BY
RACE AND SEX*

	Total		Sex: Male		Sex: Female		Race: Caucasian		Race: Black		Race: Other	
Fall 74	#	%	#	%	#	%	#	%	#	%	#	%
Devel.	380	100	252	100	128	100	232	100	132	100	16	100
Other	978	100	469	100	509	100	763	100	175	100	40	100
Total	1358	100	721	100	637	100	995	100	307	100	56	100
Winter 75												
Devel.	279	73.4	189	75.0	90	70.3	167	71.2	101	76.5	11	68.8
Other	602	61.6	315	67.2	287	56.4	471	61.7	105	60.0	26	65.0
Total	881	64.9	504	69.9	377	59.2	638	64.1	206	67.1	37	66.1
Fall 75												
Devel.	185	48.7	126	50.0	59	46.1	108	46.6	69	52.3	8	50.0
Other	342	35.0	186	39.7	156	30.6	266	34.9	65	37.1	11	27.5
Total	527	38.8	312	43.3	215	33.8	374	37.6	134	13.6	19	33.9
Fall 76												
Devel.	117	30.8	84	33.3	33	25.8	64	27.6	47	35.6	6	37.5
Other	229	23.4	119	25.4	110	21.6	177	23.2	46	26.3	6	15.0
Total	346	25.5	203	28.2	143	22.4	241	24.2	93	30.3	12	21.4
Fall 77												
Devel.	70	18.4	52	20.6	18	14.1	39	16.8	29	22.0	2	12.5
Other	139	14.2	73	15.6	66	13.0	109	14.3	27	15.4	3	7.5
Total	209	15.4	125	17.3	84	13.2	148	14.9	46	18.2	5	8.9
Graduates												
Devel.	23	6.1	14	5.6	9	7.0	16	6.9	6	4.5	1	6.3
Other	86	8.8	36	7.7	50	9.8	67	8.8	17	9.7	2	5.0
Total	109	8.0	50	6.9	59	9.3	83	23	23	7.5	3	5.4

*Column percentages

DEVELOPMENTAL FOLLOW-UP STUDY

STUDENT PERFORMANCE IN DEVELOPMENTAL MATH

FALL 1975 - FALL 1977

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March, 1979

Developmental Follow-up Study
Student Performance in Developmental Math
Fall 1975-Fall 1977

INTRODUCTION

Developmental Math Program

The Developmental Math Program at TNCC is designed to strengthen a student's overall math ability to the level necessary for entry into the math courses required in his curriculum.

When a student enters TNCC, he may be required to enroll into one or more developmental math courses in order to advance into his chosen curriculum. The list of these courses is as follows:

Math 05- Basic Arithmetic
Math 01- Basic Arithmetic and Algebra*
Math 06- Basic Algebra I
Math 07- Basic Algebra II
Math 08- Basic Geometry
Math 33- Basic Algebra III
Math 09- Trigonometry

*The Math 01 course was not offered until the fall quarter of 1976 and, therefore, was not available to the students of this study.

The objectives for these courses are presented in the appendix on page 63.

The college counselors evaluate the student's high school grades in math to determine whether the student has an adequate math background to be placed directly into one of the advanced developmental courses (Math 08, Math 33, or Math 09). If a student's high school grades are not available or his records indicate inadequate preparation, the counselor will administer a basic arithmetic test to him prior to his registering for classes.

In 1975, the counseling center used the McGraw-Hill Mathematics Test as the device for evaluating students in basic computational skills. If a student answered correctly less than 12 out of 60 problems, he was placed directly into a basic arithmetic course. Since the McGraw-Hill Mathematics Test contained many concepts ranging from simple basic arithmetic to problems involving complicated trigonometric functions, the final score on the test did not indicate the specific areas of weakness. A student correctly answering more than 12 on the test might be placed into an algebra course when he, in fact, needed to enter the program at the basic arithmetic level.

The Developmental Math Department needed an instrument to identify students at the basic arithmetic level only and the McGraw-Hill test did not do this. In 1976, our department designed a Basic Arithmetic Placement Test that has been most reliable in accurately identifying those students who have a weak background in basic arithmetic. With this testing device a student answering less than 14 out of 20 problems correctly is placed into a basic arithmetic course. A student who scores over 14 is placed directly into Math 06 or Math 01 (depending upon his curriculum).

Students are not placed directly into Math 07 through the testing process in the counseling center. The student is placed into Math 06 and may advance to Math 07 by demonstrating that he has successfully completed the objectives for Math 06.

After a student is enrolled in Math 05, 01, or 06, he is given a pretest over the material to be covered in the specific course. If he performs exceptionally well on the pretest, he may advance to the next math course, whether it will be the next developmental math course or the first credit math course required in his curriculum.

Not all curriculums require the same amount of preparation in mathematics. Some curriculums require only arithmetic while others require more advanced courses as well. See Appendix A on page 62 for a schematic of the developmental math program in relation to the credit math courses that it serves.

Certain developmental math courses are individualized. The self-paced courses are Math 05, 01, 06, and 07. Math 08, 33, and 09 are primarily lectured courses.

Teaching Methods

Individualized Classes

In an individualized class, the student learns the course content at his own rate. The student is provided with a course outline/tentative schedule, Textbooks for Math 05 (Basic Arithmetic), Math 01 (Arithmetic and Algebra), and Math 06 and Math 07 (Algebra I and Algebra II) have been selected to meet the needs of students enrolled in individualized classes. A set of tests has been designed by the department for each of these courses. The student completes these tests in sequence before a satisfactory grade is awarded. The minimum passing score for each test is 80%. Students scoring below 80% on any test must retest that material.

A student may complete an individualized course at his own pace provided he shows interest by progressing in the course. If the student has successfully completed the course which he is taking and if he is required to take a follow-up math course, he is recommended to begin the next course during the same class. It does not involve any additional money or re-registration for the second course. The student could complete Math 05 and Math 01 or Math 06 and Math 07 in one quarter if he passes all the necessary tests. However, in the event that he starts either Math 01, Math 06, or Math 07 in the same quarter and is not able to complete that course, he receives a satisfactory grade for the course completed and is required to re-enroll in order to complete the unfinished course. The student may begin where he left off the previous quarter.

Lecture Discussion

At the beginning of the lecture course each student is provided with a course outline/tentative schedule. This outline is intended only as a guide; at various times the class may proceed at a faster or slower rate.

Each student is expected to study the assigned material in the text and to work the assigned exercise problems before coming to class. The first part of each class period is devoted to clarifying or expanding the material presented in the text and to resolving any questions which the students may have. The remaining time in the classroom is devoted to the introduction of concepts and exercises included in the assignment for the next class.

A set of tests has been designed by the department for the lectured courses. The student is required to pass each test by scoring at least 70%.

Program Evaluation

Since the math program consisted of six courses, the research committee found it difficult to answer all our research questions by using only one approach. Therefore, we decided to evaluate the developmental math program in two separate briefs.

The first brief, entitled Student Performance in Math 05 and Math 06 Fall 1975-Fall 1977, focuses on the success rate of Math 05 and Math 06 students, the withdrawal rate (attrition), and when and where failure occurred withing the math sequence. The second brief, entitled Student Performance in the Complete Developmental Math Program, centers on two questions regarding performance:

(1) How well did students perform in the developmental program?
(2) How did the successful developmental student's performance compare to "other" students in their credit math courses?

The two briefs overlap in terms of performance. The approach taken in the Math 05- 06 brief, however, generated more complete information involving the success rate and the attrition rate of first time students and repeaters, the number of quarters to complete the course, and the number of students who entered a credit course after completing their developmental math requirements.

GENERAL PURPOSE

In an effort to gauge what is happening in developmental mathematics courses in terms of student success, in order to judge how well this performance carries over to the follow-on credit courses, and to determine the effectiveness of new materials policies, and procedures introduced into the developmental courses, we evaluated the math program using the following two approaches.

March, 1979

Brief I

DEVELOPMENTAL FOLLOW-UP STUDY
STUDENT PERFORMANCE IN MATH 05 AND MATH 06
FALL 1975 - FALL 1977

Specific Purpose

Since the greatest enrollment in developmental math occurs in Math 05 and Math 06, we focus our efforts on assessing the performance of students in these two courses from Fall 1975 to Fall 1977. With this purpose in mind we answered the following questions:

1. How did students perform in their initial course?
   a. What was the number enrolled and the percent of successes in the course?
   b. How many quarters did it take to complete the course?
   c. How successful were repeaters?
   d. What was the attrition rate after the first attempt?
2. How well were students prepared for the next math course?
   a. What was the number enrolled and the percent of successes in the course?
   b. How many quarters did it take to complete the course?
   c. How successful were repeaters?
   d. What was the attrition rate after the first attempt?
3. Compare the performance of Math 05 students and Math 06 students:
   a. In Math 06
   b. In later developmental math courses.
4. How many students entered a credit math course after completing their developmental math requirements?
5. What was the overall attrition rate for the developmental math sequence?

PROCEDURE

The sample consisted of 78 Math 05 students and 79 Math 06 students randomly generated from 162 first-time Math 05 students and 290 first time Math 06 students enrolled Fall Quarter 1975. By using flow charts, the students were separated into two groups for each course. The "S" group comprised those students who had successfully completed the course and the "NS" group comprised those students who received a grade other than S (R, U, or W).

Both groups for both courses were tracked through nine quarters whether or not they enrolled. The information was organized and the statistics were computed, analyzed, and presented as follows.

FINDINGS

I. How did students perform in their initial course?

Success

71% of the Math 05 students were successful in Math 05. Of this group, 59% were successful their first attempt at the course. 75% of the Math 06 students were successful in Math 06. Of these, 70% were successful in their first attempt.

Non-completers

41% of the Math 05 students who did not succeed the first time never returned to complete the course. 50% of the Math 06 students who did not succeed the first time never returned to complete the course.

Of the group that did return to complete the course, a significant number (66% of the Math 05 and 75% of the Math 06) never succeeded and eventually dropped out. This same group represented 27% of the total enrollees in Math 05 and 23% of the total enrollees in 06.

Repeaters

Nine out of 19 (47.4%) of the students who repeated the Math 05 course were successful and 4 out of 12 (33.3%) of those who repeated the 06 course were successful.

Of the total number of students who initially enrolled in Math 05 and Math 06 respectively, 9 out of 78 (11.5%) were successful in 05 and 4 out of 79 (5.1%) were successful in 06 after two or more attempts in the course.

See Table 1, items 3a, b, c, d Columns 1 and 3 on page 50 for the number of quarters to complete the initial course.

II. How well were students prepared for the next math course?

63.9% of the Math 05 students who then took the follow-on Math 06 course were successful. 44.4% of these were successful in their first attempt. Of those Math 05 students who repeated the Math 06 follow-on course, 7 out of 12 (58.3%) were successful. That is, 7 out of 36 (19.4%) of the total number of Math 05 students who enrolled in the follow-on Math 06 course were successful after two or more attempts at Math 06.

58.5% of the Math 06 students who then took the follow-on Math 07 course were successful. 41.5% of these were successful in their first attempt. Of those Math 06 students who repeated the Math 07 follow-on course, 7 out of 17 (41.2%) were successful. That is, 7 out of 41 (17.1%) of the total number of Math 06 students who enrolled in the follow-on Math 07 course were successful after two or more attempts at Math 07.

See Table 1, items 3a, b, c, d, Columns 2 and 4 page 50 for the number of quarters to complete the next course.

III. Compare the Performance of Math 05 students and Math 06 students:

A. In Math 06.

23 out of 36 (63.9%) of the Math 05 students were successful in the Math 06 course. This compares to 59 out of 79 (74.7%) which is the success rate of those Math 06 students who enrolled in Math 06 as their initial course.

B. In later developmental math courses.

See Table 1, item #9.

IV. How many students entered a credit math course after completing their developmental math requirements?

Thirty-six out of 55 (65.5%) of the Math 05 successes enrolled in Math 06 while 9 out of 55 (16.4%) went on to a credit math course.

Forty-one out of 59 (69.5%) of the Math 06 successes enrolled in Math 07 while 3 out of 59 (5.1%) went on to a credit math course.

V. Overall attrition rate

41 out of 78 (52.56%) of the successful Math 05 students and 34 out of 79 (43.04%) of the successful Math 06 students did not enroll in the follow-on Math course. See Table 2 for the overall attrition rate.

CONCLUSIONS

On the average 73% of the Math 05 and Math 06 students were successful. Since we did not compare this success rate to that of other developmental programs, we cannot draw any specific conclusions here as to whether or not this rate of student achievement is an acceptable level for our department.

Students enrolled in Math 05 had performance patterns similar to students enrolled in Math 06. Up to one-half of the students (41% for Math 05 and 50% for Math 06) who were not successful the first time dropped out completely. Of the portion that did return to complete the course, up to three-fourths of these (65% for Math 05 and 75% for Math 06) were still unsuccessful and later dropped out. There are a number of reasons for which students withdraw from class. We did not, in this brief, attempt to determine what factors were involved. Therefore we must be careful in labeling students as "failures" until all such factors are ascertained. We deal with this issue in Phase II of the study.

The majority of students who completed either Math 05 of Math 06 did so within one quarter. All students who repeated Math 05 or Math 06 were successful either in two quarters or not at all. (Note: Students were tracked for only nine quarters from Fall 1975 to Fall 1977.) The same applies to those who completed the follow-on developmental course.

In comparing the two groups through the five developmental courses, the greatest overall attrition occurred from Math 05 to Math 06 and again from Math 06 to Math 07. (See Table 2, page 52). Since Math 05 and Math 06 are terminal courses for students enrolled in curriculums such as Business Management and Nursing, the greatest attrition, as expected, did occur at the Math 05 and 06 levels.

There was a slight drop (8%) in success rate from Math 05 to Math 06. There was a substantial drop (16%) from Math 06 to Math 07. One possible explanation coule be that each subsequent course is more advanced and therefore demanding (see Appendix A for course objectives).

The decrease in success rate of both Math 05 and Math 06 poses this question, "Did we adequately prepare our Basic Arithmetic and Basic Algebra I students for their next developmental math course?"

MATH 05

The Math 05 students were not as successful in Math 06 as were the Math 06 students. One factor to consider is these students' level of ability. Initially a student is placed in Math 05 because he lacks certain skills in basic arithmetic. If a student is successful in Math 05, then he has significantly improved his skills and this deficiency should no longer be in question. If we are adequately preparing the Math 05 student for Math 06, then the drop in success rate must be attributed to other factors such as (1) a possible gap in the preparation of the 05 student for the 06 course and (2) limited skills of the student other than mathematics (e.g. reading skills).

MATH 06

There was an even greater drop in success rate from Math 06 to Math 07 (16%). Math 06 was primarily designed as a "confidence building" course for students who had no previous exposure to algebra. Math 07 was a more rigorous course. Due to the design of the Math 06 course, a student could have success in Math 06 without developing the study patterns necessary to succeed in Math 07. Therefore, we conclude that there was a gap in the 06 student's preparation for the Math 07 course.

If the successful Math 05 student enrolled in Math 07 after completing Math 06, he seemed to out perform the successful Math 06 student who enrolled in the Math 07 course. Perhaps by the time a Math 05 student had progressed to Math 07 under our system, he had become disciplined enough to develop the study habits necessary to succeed. The Math 06 student, however, because of the simplistic design of the 06 course, could pass Math 06 without developing logical reasoning through proper study skills. This same student found it very difficult to follow the mathematical methods and procedures involved in Math 07 that were based upon the skills he should have acquired in Math 06.

RECOMMENDATIONS

The math department must determine what constitutes an acceptable percent of success in our courses in comparison to other developmental programs.

A large number of students drop out after their first attempt and never return. More research is needed in this area to determine what factors are involved.

Of the few students that do return, as many as 3 out of 4 of these are not successful even in their second or third attempts. Efforts should be made to counsel these students on an individual basis and structure a program around their particular needs.

Efforts should be made to analyze the learning objectives of all sequential courses. Changes may be needed to bridge any possible gaps between the Math 05-06-07 courses, to better prepare the students for each subsequent course, and to improve the success rate of the population enrolled in these courses.

Efforts should be made to analyze whether or not the decrease in success rate from Math 05 to Math 06 was due to the students' limited reading ability. Perhaps English 08 (Reading Improvement) should be a prerequisite to Math 06 as opposed to being a co-requisite course, as does occur in many cases.

TABLES

Brief I

TABLE 1

Student Performance - Math 05 and Math 06
Fall 1975 - Fall 1977

	Math 05	Math 05-06	Math 06	Math 06-07
1. Total # Successful / # Enrolled	55/78 (70.5%)	23/36 (63.89%)	59/79 (74.7%)	24/41 (58.54%)
a. 1st time successes / # Enrolled	46/78 (58.97%)	16/36 (44.4%)	55/79 (69.6%)	17/41 (41.46%)
b. Successful later attempt / # Enrolled	9/78 (11.5%)	7/36 (19.44%)	4/79 (5.1%)	7/41 (17.07%)
2. # Successful later attempt / # Re-enrolled	9/19 (47.4%)	7/12 (58.3%)	4/12 (33.3%)	7/17 (41.18%)
3. Of the successes, how many completed course in:				
a. 1 quarter	46	15	55	17
b. 2 quarters	9	7	4	7
c. 3 or more quarters	0	0	0	0
d. completed two dev. courses in one quarter (of enrollees)	1/78 (1.3%)	--	5/79 (6.3%)	--
4. Of the successes, what #(%) enrolled in:				
a. the next dev. course	36/55 (65.5%)	--	41/59 (69.49%)	--
b. credit course	9/55 (16.4%)	3/22 (13.64%)	3/59 (5.08%)	2/41 (4.88%)
c. next dev. course or credit course	45/55 (81.8%)	--	44/59 (74.58%)	--
*5. Of the N.S.'s on first attempt, how many never succeeded and eventually dropped out?	21/32 (65.6%)	11/20 (55%)	18/24 (75%)	15/24 (62.5%)

*N.S. - indicates students who were not successful!

TABLE 1 (continued)

		Math 05	Math 05-06	Math 06	Math 06-07
6.	Of the total enrollees, how many never succeeded and eventually dropped out?	21/78 (26.9%)	11/36 (30.56%)	18/79 (22.78%)	15/41 (36.59%)
*7.	Of the N.S.'s, # (%) who never re-enrolled ever after only one attempt.	13/32 (40.6%)	7/21 (33.3%)	12/24 (50%)	7/24 (29.17%)
8.	Of the total enrollees, what # (%) never enrolled in the next dev. course?	41/78 (52.56%)	--	34/79 (43.04%)	--
9.	Of the successes, what # (%) of those who enrolled in the next course were successful in: 06	23/36 (63.89%)	--	59/79 (74.7%)	--
	07	10/14 (71.4%)	--	23/41 (56.1%)	--
	08	5/5 (100%)	--	13/16 (81.3%)	--
	33	0/1 (0%)	--	6/6 (100%)	--

*N.S. - indicates students who were <u>not</u> <u>successful</u>!

TABLE 2

OVERALL ATTRITION RATE
Math 05-06
Fall 1975 - Fall 1977

(Percent of successful students who did not enroll in the next developmental course)

	05 to 06	06 to 07	07 to 08	08 to 033
1. What is the overall attrition rate from 05 to advanced developmental courses?	$\frac{41}{78}$ (52.56%)	$\frac{21}{78}$ (26.9%)	$\frac{9}{78}$ (11.5%)	$\frac{4}{78}$ (5%)
2. What is the overall attrition rate from 06 to advanced developmental courses?		$\frac{34}{79}$ (43.04%)	$\frac{25}{79}$ (31.6%)	$\frac{10}{79}$ (12.66%)

May, 1979

Brief II
Developmental Follow-up Study
Student Performance in the Complete Developmental Math Program
Fall 1975 - Fall 1977

Specific Purpose

The purpose of this brief was to assess the sequential performance of students in each developmental math course and their subsequent performance in the credit math course for which they were preparing. Toward this end the following questions were considered:

I. How well did students perform in the developmental math sequence? (Math 01 is not included here since it was not available to students until 1976.)

   A. Compare the findings of both studies on student performance in developmental math.

   B. How did students perform in Math 05, 06, 07, 08, and 33?

II. How did developmental students compare to "other" students in performance in their credit math courses?

   A. How many developmental students enrolled in a credit math course and received a grade of A, B, C, D, or F?

   B. How many developmental students received a grade of C or better in their credit math courses?

   C. How many students from the "Developmental Group" received a grade of C or better in a credit math course for which they did not receive the proper developmental preparation?

   D. How many developmental students received a grade of W or I in their credit math courses?

PROCEDURE

The office of Institutional Research supplied us with a one page summary sheet and a computer list of all students who were first-time enrolled in a developmental math course as of Fall, 1975. The print-out listed the social security numbers of 525 students, four letters of the students' last name, and all the grades that each student received in a credit or developmental math course that he enrolled in between Fall, 1975 and Winter, 1977.

From this raw data, the students' grades were traced through the six quarters. The information was organized into categories and the statistics were computed, analyzed, and presented as follows.

FINDINGS

I. How well did students perform in the developmental math sequence?

A. Compare the findings of both studies on student performance in developmental Math 05 and 06.

Of the total number of students enrolled in Math 05, 71% of the S-1 group and 76% of the S-3 group were successful. (S-1 refers to the basic arithmetic students in the brief on Student Performance in Math 05-06; S-3 refers to the basic arithmetic students in the brief on Student Performance in the Complete Developmental Math Program.

Of the total number of students enrolled in Math 06, 75% of the S-2 group and 73% of the S-4 group were successful. (S-2 refers to the basic Algebra I students in the brief on Student Performance in Math 05-06; S-4 refers to the basic Algebra I students in the brief on Student Performance in the Complete Developmental Math Program.

B. How did students perform in Math 05, 06, 07, 08 and 33?

Successful - 83.4% is the mean for the number of students who successfully completed the math course for which they were enrolled anytime within the six quarters studied.

Unsuccessful - 18.3% is the mean for the number of students who were not successful in completing the math course for which they were enrolled.

Withdrawal - 12.6% is the mean for the number of students who withdrew from the math course in which they were enrolled.

II. How did developmental students compare to "other" students in performance in their credit math courses?

A. How many students enrolled in a credit math course and received a grade of A, B, C, D, or F?

Devel. Group: Of the initial 525 first time students taking a developmental math course in the Fall of 1975, 93 successfully completed the appropriate developmental math preparation and subsequently enrolled in a credit math course receiving a grade of A, B, C, D, or F. This group of students will be referred to as the "Devel. Group".

Other Group: One thousand three hundred sixteen (1,316) non-developmental students enrolled in a credit math course and received a grade of A, B, C, D, or F. This group of students will be referred to as the "Other Group".

B. How many students received a grade of C or better in their credit math courses?

Devel.Group: 72 out of 93 (77%) of the "Devel.Group" received a grade of C or better in the credit math course for which they were prepared. The percent that received a grade of C or better ranged from 69% in Math 151 to 100% in Math 141 and Math 161 combined.

Other Group: 967 out of 1,316 (74%) of the "Other Group" received a grade of C or better in a credit math course. The percent that received a grade of C or better ranged from 64% in Math 151 to 85% in Math 181.

Refer to Table 2 page 61 for the overall performance distribution.

C. How many students from the "Devel.Group" received a grade of C or better in a credit math course for which they did not receive the proper developmental preparation.

Of the initial 525 first time students taking a developmental math course, 10 students entered a credit math course without completing the proper developmental preparation. Of these 10 students, four (40%) received a grade of C or better. Of these four students, two received a grade of C or better in Math 121, one student in Math 161, and one student in Math 181.

D. How many students recieved a grade of W or I in their credit math courses?

Devel.Group: Of the initial 525 first time students taking a developmental math course, six students completed the appropriate developmental math preparation and received a grade of W or I in a credit math course. Of these students, four received a W or I in Math 151 and two received a W or I in Math 161.

Other Group: In addition to the 1,316 students in the "Other Group", there were 324 students who received a W or I in a credit math course. Of these 324 students, 5 received a W or I in Math 11, 25 in Math 118, 5 in Math 121, 19 in Math 141, 132 in Math 151, 90 in Math 161, and 48 in Math 181.

CONCLUSIONS

In reference to the performance of the Math 05 and Math 06 students, we find the statistics to be consistent in the portion of both studies which overlap. In comparing the success rates of the Math 05 and Math 06 students in both studies, similar performance patterns were maintained. Of the total number of enrollees in Math 05, 71% of the S-1 group and 76% of the S-3 group were successful. Of the total number of enrollees in Math 06, 75% of the S-2 group and 73% of the S-4 group were successful.

After deleting the numbers of students who withdrew from each course the final figure for percent success increased significantly. For example, the success rate increased from 76% to 90% in the Math 05. In the table, found on pages 59 and 60, we analyzed the numbers of students who actually completed the course receiving a grade of "S, R, or U." The percent of success in the math courses ranged from a low of 75% for Math 07 to a high of 100% in Math 09. The mean for success in these courses was 83%.

The only course that fell below this mean was Math 07. As stated before in the brief on "Student Performance in Math 05 and Math 06, Fall, 1975-1977", Math 06 did not adequately prepare the Math 06 student for the more rigorous learning objectives of the Math 07 course. The success rate in this study supports this finding.

Although we had no statistical evidence at that time, we felt that there was a problem in the Math 06-07 sequence. In the Fall of 1976, we completely revised the Math 06-07 program and restructured the learning objectives for both courses. New textbooks were purchased and new tests were designed to bridge the "gap" between this sequence in the math program. Future data analysis will help us to determine whether or not our new materials did, indeed, do what they purport.

A mean of 18% of our students who completed the quarter was unsuccessful. This average indicates that very few of our students are unsuccessful if they finish out the term of the course. In other words if a student is persistent, he has better than an 80% chance of being successful in his endeavor. In every course, except Math 07, the percentage of unsuccessful students was lower than the mean. We anticipated that the number of unsuccessful students in the Math 07 course (25%) would be high in comparison to the other courses. As stated earlier, we have revised the Math 06-07 course materials in an effort to better prepare the student for the succeeding course.

The highest percent of withdrawal from a course occurred in Math 05 as compared to the other math courses. For those students enrolled in Math 05, this course was their initial challenge in developmental math and quite possibly their first course at TNCC. The fact that these students entered at a low performance level in combination with other factors (fears, frustration, poor study habits, etc.) could arouse feelings of insecurity in relation to the subject matter and lead to withdrawal from the course. On the other hand, the study shows that 9 out of 10 students who stayed in school to complete the Math 05 course were indeed successful. The findings also point out that the rate of student withdrawal decreases as the student advances from one course to the next, therefore indicating that the longer a student remains in the program, his chances for successful completion become greater.

The Findings indicate that only 10 students entered a credit math course without completing the proper developmental math preparation. This relatively small number may be attributed to the comprehensive advising procedure that was in existence at TNCC during this period. At that time all students who were required to take one or more developmental courses were advised by a faculty member from this division. A student could not officially change his curriculum until all his developmental requirements were completed. This procedure was changed in 1976 to enable more students to enter their desired curriculum as soon as possible. We had hoped that this new procedure would allow students to be more effectively advised in their curriculum by faculty members in that discipline. It will be interesting, in future studies to see how the new advising procedures effect the number of students entering a credit math course with or without proper developmental math prerequisites.

Seventy-seven percent (77%) of the "Devel Group" received a grade of C or better in the credit math course for which they were prepared; whereas 74% of the "Other Group" received a grade of C or better. This demonstrates that developmental math students who complete the appropriate developmental math preparation perform overall at a higher level than non-developmental students (Other Group) in credit math courses. Not only did more developmental students receive a C or better grade than the "Other Group", but also the table on page 61 illustrates that the developmental student out-performed the "Other Group" in every credit math course (even Math 151 where both groups experienced their lowest percent of success.) On the other hand, more of the "Other" students withdrew or received a grade of I (Incomplete) in their credit courses than the developmental studies group.

The Findings pointed out that in comparing overall student performance in the credit math courses, the percent of students from both the "Devel Group" (69%) and the "Other Group" (63%) who received a grade of C or better was lowest for Math 151. At that time (1975), the developmental math prerequisite for Math 151 was only Math 05. During the Fall Quarter, 1975, through a series of articulation meetings, the Business Department and the developmental math faculty mutually agreed that Math 05 alone was not adequate preparation for students entering Math 151 and the Math 06 course would be added as a prerequisite. After a brief trial period the Business Department indicated that the Math 06 course itself was not properly filling the gap between Math 05 and Math 151. Through the joint efforts of the developmental math faculty and the Business Department, a new course, Math 01, was developed and became the official prerequisite for Math 151. The Math 01 course was initiated in the Fall Quarter, 1976. It is hoped that future studies will show that the introduction of Math 01 will have a positive effect on the success rate of developmental studies students enrolled in Math 151.

Of the 525 first time students who entered a developmental math course, only 93 were successful in the appropriate developmental math preparation and subsequently completed a credit math course with a grade of A, B, C, D, or F. It would appear that only 93 out of 525 (18%) of our successful developmental math students enrolled in the credit course for which they were prepared. There are many reasons for the significant number of students not enrolling in a credit math course. Some of the reasons are as follows:

1. Many students enroll at TNCC without intentions of completing a definite program. They take courses to qualify for job promotion, to prepare for standardized tests, or perhaps for self-improvement.

2. Some students enroll in developmental math at TNCC only to meet entrance requirements for various four year instituiions or technical apprentice schools.

3. This brief followed the records of students for six quarters. Perhaps these six quarters did not allow enough time for a maximum number of students to complete their developmental math preparation. Many students at TNCC are part-time and would need a few more quarters than the full-time student to complete the required developmental math preparation. This is especially true of the students in scientific or technical fields.

RECOMMENDATIONS

A number of the math students enrolled in self-paced courses completed the course early in the quarter and satisfied all the objectives of the subsequent course as well. These students were awarded a "S" grade "by examination" for the subsequent course. Due to the fact that credit by exams were not filed on the computer data banks we had to hand check student records for credit by exam. Presently the computer records of many students grades remain incomplete. Therefore, we recommend that the credit by exam grades be filed on the system along with the students other course grades.

In the event that we cannot achieve the aforementioned objective, we recommend that our present system of recordkeeping for the department be reviewed so that a more complete list will be compiled for those students who receive credit by exam grades.

Because course learning objectives do tend to change from year to year, and quarter to quarter, we recommend that the developmental math department continue to articulate with the credit math and business departments to keep abreast of their current philosophies and learning objectives in regard to student preparation.

We revise our math courses each quarter by updating materials, introducing new materials, deleting concepts, varying our teaching techniques, etc. We should continue to assess the effects of these changes in terms of student performance.

Since a significant number of developmental students are no longer advised by a developmental faculty member but are presently advised for class registration by faculty members in the students' chosen curriculum, this new advising procedure will effect the number of students who enter credit math with or without proper developmental preparation. All faculty advisors should make every effort to insure that students successfully complete their proper developmental preparation before entering a credit math course.

TABLES

Brief II

Table I

Performance Distribution

Developmental Math course(s) Fall, 1975 - Winter, 1977

Course Number	% Successful of those students that initially enrolled (Minus Withdrawals)	% Successful of those students that initially enrolled	% Unsuccessful of those students that initially enrolled (Minus Withdrawals)	% Withdrawal of those students that initially enrolled
Math 05	$\frac{122}{136}$ (89.7%)	$\frac{122}{160}$ (76.3%)	$\frac{14}{136}$ (10.3%)	$\frac{24}{160}$ (15%)
Math 06	$\frac{250}{301}$ (83.1%)	$\frac{250}{343}$ (72.9%)	$\frac{51}{301}$ (16.9%)	$\frac{42}{343}$ (12.2%)
Math 07	$\frac{122}{162}$ (75.3%)	$\frac{122}{186}$ (65.6%)	$\frac{40}{162}$ (24.7%)	$\frac{24}{186}$ (12.9%)
Math 08	$\frac{69}{81}$ (85.2%)	$\frac{69}{87}$ (79.3%)	$\frac{12}{81}$ (14.8%)	$\frac{6}{87}$ (6.9%)

Table 1 (cont.)

Course Number	% Successful of those students that initially enrolled (Minus Withdrawals)	% Successful of those students that initially enrolled	% Withdrawal of those students that initially enrolled (Minus Withdrawals)	% Withdrawal of those students that initially enrolled
Math 33	$\frac{41}{47}$ (87.2%)	$\frac{41}{49}$ (83.7%)	$\frac{6}{47}$ (12.8%)	$\frac{2}{49}$ (4.1%)
Math 09	$\frac{2}{2}$ (100%)	$\frac{2}{2}$ (100%)	$\frac{0}{2}$ (0%)	$\frac{0}{2}$ (0%)
Mean	83.4%	73.7%	18.3%	12.6%

See Appendix A for Math 05, 06, 07, 08, 33, 09 course onjectives 1975-76

Table II

Performance Distribution

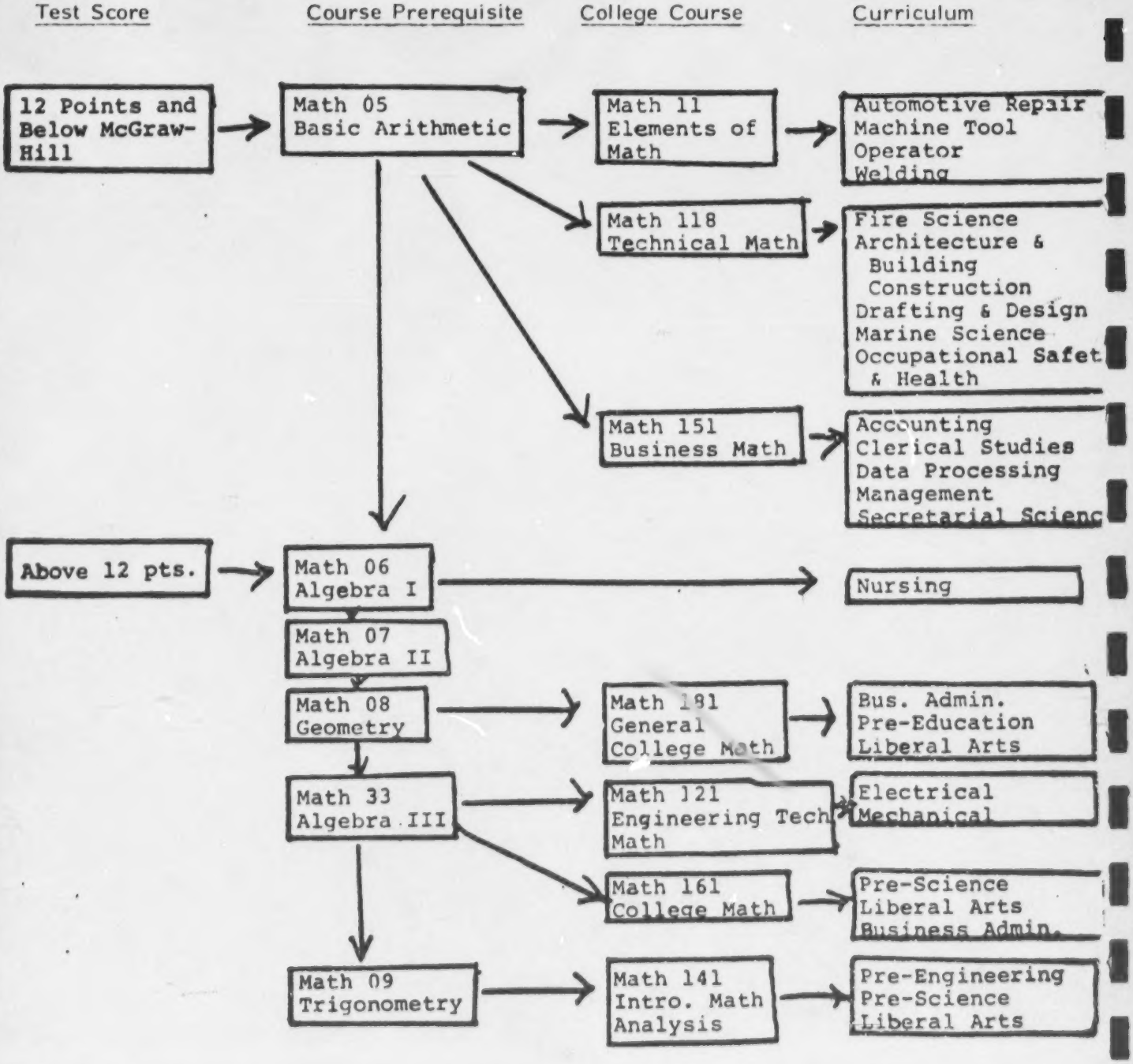
Credit Math Courses Fall, 1975 - Winter, 1977

	Grade C or Better		Below C	
	#	%	#	%
Math 11				
Devel	4	80%	1	20%
Other	39	83%	8	17%
Math 118				
Devel	11	79%	3	21%
Other	111	69%	50	31%
Math 121				
Devel	9	90%	1	10%
Other	99	83%	21	18%
Math 141				
Devel	1	100%	0	0%
Other	51	79%	14	21%
Math 151				
Devel	20	69%	9	31%
Other	349	64%	197	36%
Math 161				
Devel	13	100%	0	0%
Other	120	83%	25	17%
Math 181				
Devel	14	93%	1	7%
Other	198	85%	34	15%
Mean				
Devel		84%		25%
Other		75%		30%

APPENDIX A

APPENDIX A

DEVELOPMENTAL STUDIES PROGRAM
1975



APPENDIX B

1975

MATH 05

BEHAVIORAL OBJECTIVES FOR BASIC ARITHMETIC

Unit I The Decimal System

1. Use the decimal system of notation, know the set of digits, and write any whole numbers using these digits.
2. Know the set of natural numbers or counting numbers and the set of whole numbers.
3. Graph a sub-set of the whole numbers, such as $\{0, 1, 2, 3\}$, on the number line.
4. Name the place value of any selected digit in a whole number such as 7,263,801.
5. Write any whole number, such as 69,025 in expanded form.
6. Read any whole number less than one quadrillion, such as 8,004 or 3,690,851.
7. Round off a whole number, such as round off 3,254 to the nearest hundred.

Unit II Addition of Whole Numbers

1. Define "addend" and "sum."
2. Know the basic addition facts.
3. Add whole numbers, such as finding the sum of:

   a. $1,392 + 163 + 47 =$ _____

   b.
   $$\begin{array}{r} 56 \\ +73 \\ \hline \end{array}$$

   c.
   $$\begin{array}{r} 3,714 \\ 326 \\ 27 \\ +8,765 \\ \hline \end{array}$$

Unit III Subtraction of Whole Numbers

1. Define subtraction in terms of addition.
2. Define "minuend," "subtrahend," and "difference."
3. Use the definition of subtraction to check the accuracy of a subtraction problem.
4. Know the basic subtraction facts.

5. Subtract one whole number from another, when this is possible, such as finding the difference and checking in the following problems:

   a. $\begin{array}{r} 597 \\ -432 \\ \hline \end{array}$ b. $\begin{array}{r} 6100 \\ -3685 \\ \hline \end{array}$

   c. 84,326 - 29,988 = _____

Unit IV Multiplication of Whole Numbers

1. Define multiplication as repeated addition.
2. Define "factor" and "product."
3. Know the basic multiplication facts.
4. Know and read the symbols for multiplication.
5. Define and use the Distributive Property.
6. Multiply any two whole numbers, such as finding the product in the following problems:

   a. $\begin{array}{r} 7035 \\ \times\ 78 \\ \hline \end{array}$ b. $\begin{array}{r} 8004 \\ \times 209 \\ \hline \end{array}$

   c. 4089 x 604 = _____

Unit V Division of Whole Numbers

1. Define division in terms of multiplication.
2. Know and read the symbols indicating division.
3. Define "divisor," "dividend," "quotient," "remainder."
4. Understand why division by zero is not possible.
5. Know the basic division facts.
6. Understand division as repeated subtraction.
7. Know the method of long division and how to check any division problem.
8. Divide one whole number into another and find the quotient and remainder, such as in the following problems:

   a. 9,218 ÷ 23 = _____

   b. $36\overline{)3988}$ c. $723\overline{)841682}$

Unit VII Factors

1. Define "factor," "divisor," "prime number," "composite number," "multiple," "common multiple," "least common multiple."

2. Know the prime numbers less than 50.

3. Determine the prime factorization of a composite number by the method of repeated division by prime numbers. For example, find the prime factorization of 108 or 605.

4. Given any natural number, determine whether it is prime or composite.

5. Find the least common multiple of two or more natural numbers by first determining the prime factorization of each of the given numbers. For example, find the LCM of 40 and 15, or of 10, 12, and 14.

Unit VIII Fractions

1. Define "fraction," "numerator," "denominator," "proper fraction," "improper fraction," "equivalent fractions."

2. Given any common fraction, to write an equivalent fraction with a predetermined denominator. For example, write $\frac{2}{11}$ as an equivalent fraction whose denominator is 187. Or write $\frac{9}{7}$ as an equivalent fraction with denominator 49.

3. Given any common fraction, to determine whether it can be reduced, and if so to write it in simplest form. For example, reduce each of the following to lowest terms:

$$\frac{36}{42}, \quad \frac{126}{735}, \quad \frac{140}{112}.$$

Unit IX Addition of Fractions

1. Define "addition of fractions," "common denominator," "lowest common denominator."

2. Add fractions with like denominators, such as add $\frac{3}{16} + \frac{2}{16} + \frac{7}{16}$, and write the sums in lowest terms.

3. Given two or more fractions with unlike denominators to find the least common denominator and to re-write each fraction as an equivalent fraction with the LCD as its denominator.

4. Add two or more fractions with unlike denominators by first finding the LCD and express the sum as a fraction in lowest terms. For example, add: $\frac{3}{8} + \frac{5}{12} =$ _____, $\frac{3}{10} + \frac{1}{6} + \frac{1}{2} =$ _____.

Unit X Subtraction of Fractions

1. Define subtraction of fractions.

2. Subtract fractions with like denominators, such as $\frac{5}{9} - \frac{2}{9} =$ _____ or $\frac{19}{24} - \frac{7}{24} =$ _____, and express the result in simplest form.

3. Find the difference between two fractions with unlike denominators by first finding the LCD and express the result as a fraction in lowest terms. For example, subtract: $\frac{2}{9} - \frac{1}{18} =$ _____, $\frac{31}{60} - \frac{5}{24} =$ _____

Unit XI Mixed Numbers

1. Define "mixed number."

2. Change a mixed number to an improper fraction. For example, write each of the following as an improper fraction: $7\frac{3}{5}$, $14\frac{1}{4}$, $13\frac{2}{5}$

3. Change an improper fraction to a mixed number. For example, write each of the following as a mixed number: $\frac{31}{5}$, $\frac{415}{18}$, $\frac{368}{45}$.

4. Add mixed numbers by either of two methods,
   a. By adding the whole numbers and fractions separately and then combining these two sums, or
   b. By first changing each mixed number to an improper fraction and then adding these fractions.

   In either case, the result is to be in simplest form.

   For example, add: a. $3\frac{1}{2}$ b. $2\frac{3}{10}$ c. $2\frac{2}{15} + 4\frac{1}{10} =$ _____

   $2\frac{1}{4}$ $+1\frac{3}{4}$

   $+1\frac{1}{6}$

5. Find the difference between two mixed numbers by either of two mehtods,
   a. By subtracting the whole numbers and the fraction separately, and then combining the results under addition, or
   b. By first changing each mixed number to an improper fraction and then subtracting.

   In either case the result is to be in simplest form.

   For example, subtract: a. $6\frac{3}{8} - 1\frac{5}{8}$ b. $4 - 2\frac{3}{7}$ c. $5\frac{2}{15} - 4\frac{3}{20} =$ _____

6. When the division of one natural number by another is not exact, to write the quotient as a mixed number. For example, divide 4,132 -:- 61, and write the quotient as a mixed number.

Unit XII Multiplication of Fractions and Multiplication of Mixed Numbers

1. Define multiplication of fractions.

2. Multiply fractions and express the product in simplest form.

   For example multiply: a. $\frac{2}{9} \times 17 =$ _____ b. $\frac{10}{6} \times \frac{9}{5} \times \frac{2}{7} =$ _____

3. Multiply mixed numbers by first changing each mixed number to an improper fraction and then using the technique of paragraph 2 on the previous page. For example, multiply:

   a. $2\frac{1}{2} \times 3\frac{1}{4} =$ _____ b. $\frac{3}{4} \times 2\frac{1}{3} \times 8 =$ _____

Unit XIII Division of Fractions and Division of Mixed Numbers

1. Define "reciprocal." Find the reciprocal of any number such as 8. $\frac{4}{7}$, $\frac{75}{8}$, $12\frac{5}{7}$.

2. Define "complex fraction." Write an expression involving division of fractions, such as $\frac{3}{4} \div \frac{5}{8}$, as a complex fraction.

3. Define division of fractions as the result of multiplying the dividend by the reciprocal of the divisor. Use this rule to do division problems, such as

   $\frac{5}{6} \div \frac{7}{12}$ or $4\frac{2}{3} \div 2\frac{2}{5}$; or to simplify expressions such as: $\frac{\frac{5}{9}}{\frac{2}{3}}$ or $\frac{4\frac{1}{3}}{2\frac{1}{4}}$. In every case express the result in simplest terms.

Unit XV Decimal Numbers

1. Define "decimal fraction" and the "decimal form" of writing a decimal fraction

2. Extend the idea of place value to include places to the right of the units place, so as to write a "decimal number" or "decimal." Know the names of these place values to the right of the units place. Know where to position the decimal point and when to use it.

3. Write a decimal number in expanded form. For example, 3.9204 = 3 ones + 9 tenths + 2 hundredths + 0 thousandths + 4 ten thousandths.

4. Know the significance of using zero as a place holder in decimal notations.

5. Read decimal numbers and write them out in words. Know when to use the word "and" in order to recognize the decimal point. For example read two numbers such as 100.004 and .104 correctly and be able to differentiate.

6. Given a written description of a decimal number, to write it in decimal notation. For example, write "twenty-seven and forty-five hundredths" in decimal notation.

7. Write any decimal fraction, such as $\frac{432}{100}$ or $\frac{\quad 62}{10,000}$, in decimal form.

8. Write any decimal, such as 2.39 or 3.164 or .8 as a common fraction in simplest form.

9. Round off a decimal, such as round off 321.8947 to the nearest hundredth.

Unit XVI Addition of Decimal Numbers

Add numbers when written in decimal notation. For example, find the sum in each case.

a.
$$\begin{array}{r} 2.0600 \\ 3.0000 \\ +7.0125 \\ \hline \end{array}$$

b. $9.1 + .032 + 67 + 82,894 =$ _____

c. $0.2 + 4.3 + .648 =$ _____

Unit XVII Subtraction of Decimal Numbers

1. Find the difference between two numbers written in decimal notation. For example:

a.
$$\begin{array}{r} 15.08 \\ -3.5 \\ \hline \end{array}$$

b.
$$\begin{array}{r} 7. \\ -5.267 \\ \hline \end{array}$$

c. $4.32 - 1.794 =$ _____

2. In any subtraction problem involving decimals, check the result by addition.

Unit XVIII Multiplication of Decimal Numbers

1. Know how to place the decimal point in the product when multiplying two or more decimal numbers together.

2. Do multiplication problems, such as:

   a. $2.364 \times 4.8 =$ _____ b. $3.502 \times .018 =$ _____

3. Know the effect of multiplying any decimal number by a power of ten. Solve by inspection such problems as $426 \times 1000 =$ _____ or $1000 \times 5.67 =$ _____

Unit XIX Division of Decimal Numbers

1. Divide a decimal number by a whole number. For example: $.75 \div 5 =$ _____ or $4.2 \div 16 =$ _____

2. When the division is not exact, to round off the quotient to a pre-determined decimal place. For example, divide $9 \div 7$ and round off to hundredths.

3. Divide a decimal number by a decimal number. For example: $42.14 \div 36.7 =$ _____ or $41.7 \div .034 =$ _____

4. Know the effect of dividing any decimal number by a power of ten. Solve by inspection problems such as $41.3 \div 100 =$ _____ or $1,367 \div 1000 =$ _____

5. Change a common fraction to decimal form. If necessary, round off to a predetermined place value. For example, write $\frac{11}{20}$ as a decimal, or $\frac{3}{7}$ as a decimal correct to the nearest thousandths.

6. Change a mixed number to decimal form. For example, write $2\frac{3}{16}$ as a decimal, or $4\frac{2}{3}$ as a decimal to the nearest hundredth.

Unit XXI Percent

1. Define "percent." Understand the percent symbol.

2. Change a percent to a common fraction and reduce to lowest terms. For example, write 75% as a fraction in lowest terms. Change $37\frac{1}{2}\%$ to a fraction reduced to lowest terms.

3. Change percent to a decimal. For example, write each of the following as a decimal: 41%, 182%, $6\frac{1}{2}\%$, $\frac{2}{5}\%$.

4. Change a decimal to percent. For example, write each of the following as a percent: 6.425, 4, .0721, .4, .01.

5. Change a common fraction to percent. For example, write each of the following as a percent: $\frac{3}{5}$, $1\frac{2}{5}$, $\frac{10}{7}$, $\frac{9}{10}$.

6. Find a percent of a number. For example find 27% of 50 = _____, 110% of 32 = _____.

7. Solve problems which require the use of percent. For example: a. If the present sales tax is 4% and next year it is scheduled to go up by 25%, how much tax will you pay next year on a purchase of $12.00? b. If you weigh 150 pounds and your doctor tells you that your proper weight is 120 pounds, what percent of your present weight must you lose in order to get down to the desired figure?

Unit XXII Ratio and Proportion

1. Define "ratio."

2. Do problems such as expressing the ratio of:

   a. 5 games lost to 6 games won
   b. 2 dollars to 3 quarters
   c. 100 carports to 400 automobiles

3. Define "proportion," "first term," "second term," "third term," "fourth term," "extremes," "means."

4. Given a statement such as $\frac{6}{5} = \frac{18}{14}$, determine whether the statement is a proportion.

5. Given the values of any three terms of a proportion, find the value of the remaining term. For example, if $\frac{6}{9} = \frac{10}{n}$, then n = _____

6. Solve problems which require the use of proportion. For example:
   a. If a machine can bind 2400 books in an 8-hour day, how many books can it bind in 3 hours?
   b. If the scale on a map says that 6 inches represents 100 miles, what is the actual distance between two cities that measures $3\frac{1}{4}$ inches apart on the map? (nearest mile)

Math 06-07
Basic Algebra I and Algebra II

I. BEHAVIORAL OBJECTIVES FOR ALGEBRA I - MATH 06

A. Book 1, Chapter 1: Sets

1. Given a collection of numerals, the student writes, using set notation, the set containing the numerals.
2. Given a sentence describing a set of numbers, the student will write the set using set notation and numerals for the numbers.
3. Given a statement consisting of a number and a set of numbers connected by $\in$ or $\notin$, the student will write whether the statement is true or false.
4. Given a number followed by a set of numbers, the student will write a "$\in$" or "$\notin$" between the number and the set to make a true statement.

B. Book 1, Chapter 2: Counting Numbers

1. Given numerical expressions similar to $(3+7)+8$, $4(6+7)$, $6 \cdot (2 \cdot 4)$ and $4+8 \cdot 3$, the student will write the first step in the correct evaluation of the expression.
2. Given an open expression such as $6+4x$, $8(2+x)$, $3x+7y$, and $x(6+x)$, and a counting number replacement number for x and y, the student will write the evaluation of the expression.
3. Given an open expression similar to $(5+x)+11$, $6x \cdot 8$, $7y+2(5y+3)$, $7(4+8x)$, $9x+3+6x+2$, and $4+3x+5(2x+6)$, the student will write the simplest expression equivalent to the given expression.
4. Given the set of counting numbers as a replacement set and an equation similar to $x+8=17$, $3x=45$, $5+(x+9)=12$, $7x+13x=40$, $8x+5=45$, and $(5+x)+6=x+11$, the student will write the truth set of the equation.

C. Book 1, Chapter 3: Integers

1. Given two integers connected with +, -, or ., the student will write the integer equivalent to the expression.
2. Given an integer raised to an exponent drawn from the set (2,3,4), the student will write the integer equivalent to the given expression.
3. Given an open expression similar to $(5+x)-8$, $8^3(4x)$, $-4x+x$, $(5-2x)$, $4(2-3x)-(7-5x)$, $-2(4+3x)-(x-1)$ and $x^8 \cdot x^9$, the student will write the simplest expression equivalent to the given expression.

4. Given the set of integers as a replacement set and equations of the form $x+a=b$, $ax=b$, $ax+b=cx+d$, and $a(bx+c)+d=f$, where a, b, c, ..., f are integers, the student will write the truth set.

D. Book 1, Chapter 4: Rational Numbers

1. Given two rational numbers connected by +, - or ·, the student will write the rational number equivalent to the expression.
2. Given a rational number the student will write its reciprocal
3. Given an open expression similar to $1/3(3x-9)$, $\frac{5}{6}x-\frac{3}{4}x$, $(2x^3y)^4$, $3x^2y \cdot -5^3y^4$, or $\frac{-5x^2y}{-25x^2y^8}$,

the student will write the simplest equivalent expression.

4. Given the set of rational numbers as a replacement set and equations of the form $ax+b=c$, $ax-b=cx+d$, $x+a=b$, $ax=b$, $a(bx+c)+d=ex+f$, and

$\frac{a}{x} + b = \frac{c}{x} + d$ where a, b, c, ...f,

are rational numbers, the student will write the truth set.

II. BEHAVIORAL OBJECTIVES FOR ALGEBRA II - MATH 07

A. Book 2, Chapter 1: Equations Involving Two Variables

1. Given an ordered pair and a linear equation in two variables, the student will substitute the numbers for the variable and show whether the ordered pair is a solution of the given equation.
2. Given a linear equation of two variables, the student will graph the equation.
3. Given two linear equations of two variables the student will find their common solution by graphing, elimination, or substitution.

B. Book 2, Chapter 2: Algebraic Polynomials, Factoring, and Fractions

1. Given two binomials or a binomial and a trinomial, the student will write their product in simplest terms.
2. Given polynomials similar to $x^2+15x+14$, x^3+5x^2-6x, $5x^2-5$, $3x^2-11x+6$, or x^2+9x+2, the student will factor them completely or recognize them as prime.
3. Given an algebraic fraction where the numerator and denominator are polynomials of up to three terms, the student will write the simplest expression equivalent to the original expression.
4. Given two algebraic fractions containing polynomials, the student will write their product in simplest terms.
5. Given two algebraic fractions connected by + or - signs, where the numerators and denominators are polynomials containing from one to three terms, the student will give the simplest expression equivalent to the given problem.

C. Book 2, Chapter 3: Solving Fractional and Quadratic Equations

1. Given linear equations of the form ax=b, ax+b=c, or ax+b=cx+d, where a, b, c, and d are integers, the student will write the truth set.
2. Given linear equations of the form ax=b, or ax+b=c, where a, b, and c are rational numbers, the student will write the truth set.
3. Given fractional equations where the variable is in the denominator as a member of a binomial or trinomial, the student will write the truth set.
4. Given quadratic equations of the form $ax^2+bx+c=0$, where a, b, and c are integers, and using the set of rational numbers as a replacement set, the student will write the truth set by factoring.

D. Book 2, Chapter 4: Quadratic Equations with Irrational Solutions

1. Given numerical expressions such as $5\sqrt{98}$, $-3\sqrt{24}$, $-\sqrt{64}$, $\frac{\sqrt{70}}{\sqrt{10}}$, $\frac{2}{\sqrt{2}}$, and $\sqrt{\frac{3}{5}}$, the student will give the simplest expression equivalent to the given expression.
2. Given two or more numerical expressions containing radicals connected by + or -, the student will write the simplest expression equivalent to the given expression.
3. Given quadratic equations with irrational or rational solutions the student will write their truth set by completing the square or by using the quadratic formula.

III. The following is a general outline of the content of Math 06 - 07:

A. Sets
1. Introduction to sets
2. Uses of sets
3. Operations (Intersection, Union) with sets

B. The counting Numbers
1. Introduction to set of counting numbers
2. Addition, subtraction, multiplication and division of counting numbers
3. Evaluation of numerical expressions involving both addition and multiplication
4. Evaluation of open expressions
5. Open sentences
6. Commutative and associative laws of addition and multiplication
7. The multiplication law of one and the distributive law of multiplication over addition
8. Finding the truth set for simple equations

C. The Integers
1. Introduction to the set of integers
2. Addition and multiplication of integers
3. The negative sign as a sign of operation.
4. Evaluation of numerical expressions involving addition
5. Evaluation of numerical expressions involving multiplication
6. Exponents
7. Evaluation of numerical expressions involving both addition and multiplication
8. Evaluation of open expressions
9. Open sentences
10. The distribution law
11. Simplifying open expressions using both addition and multiplication
12. Truth sets for simple equations.

D. The Rational Numbers
1. Introduction to the set of rational numbers
2. Equality of rational numbers
3. Simplifying rational numbers using the set of prime numbers
4. Multiplication and addition of rational numbers
5. Simplifying addition and multiplication expressions
6. The distribution law
7. Truth sets for equations of the form:

$x+a=b$
$ax=b$
$ax+b=c$

$\frac{a}{x}=b$

8. Properties of the system of rational numbers.

E. Algebraic Polynomials, Factoring and Fractions
1. Introduction to polynomials
2. Simplifying polynomials
3. Multiplying monomials
4. Multiplying polynomials and simplifying results
5. Adding algebraic fractions
6. Long division of polynomials
7. Factoring polynomials
8. Factoring monomials
9. Multiplication of polynomial fractions
10. Adding polynomial fractions

F. The Real Numbers
1. The radical sign
2. Perfect squares
3. Simplifying radical expressions
4. Addition of radical expressions
5. Solving equations of the form $(x+a)^2=b$
6. Solving quadratic equations by factoring and completing the square.
7. The quadratic formula
8. Solving equations using the quadratic formula

G. Open Sentences With Two Variables
1. Ordered pairs as replacements
2. Solving equations of the form $ax+by=c$ for y
3. Finding common solutions by the addition method
4. Finding common solutions by the substitution method
5. Graphing equations using the form $y=mx+b$
6. Graphing pairs of equations

MATH 08
LEARNING OBJECTIVES FOR GEOMETRY
GENERAL OBJECTIVES - PART ONE

It is not enough for today's students to learn mathematics by rote memorization. Students now in college will face problems we cannot predict. These problems will be solved not by knowledge of mathematical facts alone, but by knowledge of mathematical methods of attacking problems. New and as yet unknown questions may involve, and in fact require, new and as yet unknown mathematics for their solution. Naturally, teachers cannot teach this, but they must teach methods of mathematical thinking as well as basic content of mathematics if they are to fulfill their responsibility to the students in their charge.

We may think of mathematics in three ways. One way is as an exercise in the manipulation of symbols. This way stresses the computational skills which are important. Students must acquire computational skill, and practice is necessary to develop this facility.

However, another way to think of mathematics is as an abstract system; students should understand the unifying, structural, and organizational ideas which establish a mathematical system. These are the conceptual ideas which they will rely on for their understanding of each new concept in their mathematical learning.

Since the inspiration for mathematics comes from the physical world, applications are also essential. In fact, there must be a blending and a balance of all three aspects, the conceptual, the computational, and the applications in any study of mathematics. It is to help you achieve this balance that is the aim and the purpose of this list of learning objectives.

GENERAL OBJECTIVES - PART TWO

Math 08 is designed as a ten-week introductory study of geometry. The learning experience is devoted mainly to plane geometry, with some solid geometry, and a short introduction to analytic geometry at the end.

In the basic scheme, the algebra of the real numbers will receive heavy treatment and the real numbers will be used freely for measuring both distances and angles. It seems a good idea in itself to connect geometry with algebra at every reasonable opportunity, so that knowledge in one of these fields will make its natural contribution to the understanding of both. Some of the topics usually studied in geometry are essentially algebraic. This is true, for example, of the proportionality relations for similar triangles. In this learning activity such concepts will be treated algebraically in order to bring out the connections with the work done previously by the student.

(Parts of these General Objectives were taken from Studies in Mathematics, SMSG, Stanford University, 1963.)

TEXT: ELEMENTARY PLANE GEOMETRY, R. Dawd Gustafson and Peter D. Frisk.

LEARNING OBJECTIVES

Chapter 1 - Fundamental Concepts

1. The student will list the four elements of a deductive reasoning system.

2. The student will contrast deductive reasoning, inductive reasoning, converse and contrapositive.

3. The student will differentiate: Definition, axiom or postulate, and theorem.

4. The student will identify equilateral triangle, isosceles triangle, right triangle, obtuse triangle, acute triangle, and scalene triangle.

5. The student will write the definition for: line segment, ray, bisector of a line segment, midpoint of a line segment, angle, straight angle, right angle, acute angle, obtuse angle, triangle, perimeter of a triangle, angle bisector, adjacent angles, perpendicular lines, perpendicular bisector of a line segment, altitude of a triangle, median of a triangle, complementary angles, supplementary angles, vertical angles.

6. The following postulates will be commited to memory, and the student will demonstrate this commitment by writing the postulates:

   a. Two points determine one and only one line.
   b. The bisector of an angle is unique.
   c. The perpendicular bisector of a line segment is unique.
   d. The perpendicular to a line through a point not on the line is unique.

7. Using definitions, postulates, and any previously proven theorems the student will prove selected theorems from the following:

   a. All right angles are equal.
   b. All straight angles are equal.
   c. Supplements of the same angle or equal angles are themselves equal.
   d. Complements of the same or equal angles are themselves equal.
   e. Vertical angles are equal.

8. The student will demonstrate his mastery of the definitions, postulates and theorems by applying these definitions postulates and theorems to the solutions of selected problems.

9. The student will demonstrate his mastery of the algebraic axioms on page by applying these axioms to both linear and quadratic equations involving real numbers.

Chapter 2 - Congruent Triangles and Basic Theorems

1. The student will write the definition of congruent triangles.

2. The student will demonstrate that he has committed to memory the three basic postulates for congruent triangles (SSS, SAS, ASA) by proving two triangles to be congruent given necessary information.

3. After proving two triangles congruent, the student will prove certain other parts of triangles are congruent by virtue of corresponding parts.

4. Using definitions, postulates, and previously proven theorems, the student will prove the following theorems:

   a. If two sides of a triangle are equal, then the angles opposite those sides are equal.
   b. The bisector of the vertex angle of an isosceles triangle is the perpendicular bisector of the base of the triangle.
   c. If a triangle has two equal angles, then the sides opposite those angles are equal.
   d. If the hypotenuse and an arm of one right triangle are equal, respectively, to the hypotenuse and an arm of a second right triangle, the right triangles are congruent.

6. The student will write the definition for hypotenuse, and arm (or leg) of a right triangle.

Chapter 3 - Parallels and Parallelograms

1. The student will write the definitions for: Parallel lines, alternate interior angles, corresponding angles, alternate exterior angles, exterior angle of a triangle, diagonal, convex figure, polygon, quadrilateral, parallelogram, distance from a point to a line, rectangle, rhombus, square, trapezoid, isosceles trapezoid, median of a trapezoid.

2. Using definitions, postulates, and previously proven theorems, the student will discuss proofs for the following theorems and the converse of these theorems:

   a. If two lines are cut by a transversal so that alternate interior angles are equal, the lines are parallel.
   b. If two lines are cut by a transversal so that corresponding angles are equal, the lines are parallel.
   c. If two lines are cut by a transversal so that two interior angles on the same side of the transversal are supplementary, the lines are parallel.
   d. If a line is perpendicular to one of two parallel lines, it is perpendicular to the other also.

3. The student will apply the method of reasoning called indirect proof to both real and pure geometric problems.

4. Using definitions, postulates, and previously proven theorems, the student will discuss proofs for the following theorems:

   a. The sum of the measures of the interior angles of a triangle is 180^{o}.
   b. A diagonal of a parallelogram divides the parallelogram into two congruent triangles.
   c. Consecutive angles of a parallelogram are supplementary.
   d. The diagonals of a parallelogram bisect each other.
   e. The diagonals of a rectangle are equal.
   f. If a line joins the midpoints of two sides of a triangle, that line is parallel to and equal to one-half of the third side.
   g. The median of a trapezoid is parallel to the bases and equal to one-half their sum.

5. The student will demonstrate his mastery of these postulates, definitions and theorems, by applying these definitions, postulates and theorems to the solution of selected problems.

Chapter 4 - Areas and Volumes

1. Given real number values the student will compute the area of each of the following:

a.	Rectangle	$A = bh$
b.	Parallelogram	$A = bh$
c.	Triangle	$A = \frac{1}{2} bh$
d.	Trapezoid	$A = \frac{1}{2}(b_1 + b_2)\ h$
e.	Square	$A = b^2$
f.	Circle	$A = \pi r^2$

2. Given real number values for all but one of the variables in the formula for a given area, the student will find the remaining variable.

3. Given real number values for the diameter or radius of a circle, the student will find the circumference of the circle.

4. Given real number values for the circumference of a circle, ($c = \pi d$) the student will find the radius and diameter.

5. Using combinations of objective 1 above, the student will find the area of various geometric figures.

6. Given real number values the student will compute the volume of each of the following where "B" is the area of the base:

a.	right rectanguiar prism	$V = B\ H$
b.	pyramid	$V = 1/3\ B\ H$
c.	right circular cylinder	$V = \pi r^2 H$
d.	right circular cone	$V = 1/3 \pi r^2 H$
e.	sphere	$V = 4/3 \pi r^3$

7. Given real number values for all but one of the variables in the formula for a given volume the student will find the remaining variable.

8. Using combinations of Objective 6 above, the student will find the volume of various geometric figures.

9. The student will use necessary definitions, postulates and theorems to prove the Pythagorean Theorem: In a right triangle, the square of the hypotenuse is equal to the sum of the squares of the other two sides.

10. Given real number values for two sides of a right triangle, the student will find the remaining side.

11. The student will prove: In a 30°-60° right triangle, the hypotenuse is twice the length of the side opposite the 30° angle. The side opposite the 60° angle is equal to the length of the side opposite the 30° angle multiplied by $\sqrt{3}$. Additionally, the student will apply this theorem to various situations where real number values are given.

12. Given real number values, the student will solve problems related to the theorem: In an isosceles 45° right triangle, the hypotenuse is equal to the length of one of its arms multiplied by $\sqrt{2}$.

Chapter 5 - Ratio, Proportion and Similarity

1. The student will write the definitions for: ratio, proportion, extremes of a proportion, means of a proportion, similar triangles, mean proportional, terms of a proportion, and similar polygons.

2. Given a, b, c, and d are real numbers and $\frac{a}{b} = \frac{c}{d}$, the student will prove each of the following:

   a. $ad = bc$

   b. $\frac{b}{a} = \frac{d}{c}$

   c. $\frac{a}{c} = \frac{b}{d}$

   d. $\frac{d}{b} = \frac{c}{a}$

   e. $\frac{a + b}{b} = \frac{c + d}{d}$

   f. $\frac{a - b}{b} = \frac{c - d}{d}$

3. Given a, b, c, d, e, and f are real numbers, and $\frac{a}{b} = \frac{c}{d} = \frac{e}{f}$, the student will prove:

$$\frac{a + c + e}{b + d + f} = \frac{a}{b}$$

4. Given a, b, c, and x are real numbers, the student will solve the following types of proportions for x:

a. $\frac{x}{b} = \frac{a}{c}$

b. $\frac{x}{a} = \frac{b}{x}$

c. $\frac{x}{x-b} = \frac{a}{c}$

d. $\frac{x + b}{a} = \frac{x - b}{c}$

e. $\frac{a}{x-b} = \frac{x}{a}$

f. $\frac{x + b}{a} = \frac{b}{x-a}$

5. Using definitions postulates and previously proven theorems, the student will discuss proofs for the following theorems. Additionally, the student will apply these theorems to the solution of related problems.

a. A line parallel to one side of a triangle divides the other sides proportionally.

b. If a line divides two sides of a triangle proportionally, it is parallel to the third side.

c. All congruent triangles are similar.

d. If two triangles have one angle of one equal to one angle of the other and the respective sides including these angles are in proportion, the triangles are similar.

e. If three sides of one triangle are in proportion to the three corresponding sides of a second triangle, the triangles are similar.

f. If the altitude is drawn on the hypotenuse in a right triangle, the hypotenuse is to either arm as that arm is to the segment of the hypotenuse adjacent to the arm.

g. In a right triangle, the square of the hypotenuse is equal to the sum of the squares of the other two sides.

h. The altitude on the hypotenuse of a right triangle is the mean proportional between the segments of the hypotenuse.

Chapter 6 - Circles and More on Similarity

1. The student will write the definitions for: Circle, radius, diameter, chord, tangent, point of tangency, arc, semicircle, major arc, minor arc, central angle, measure of the arc, inscribed angle, secant, line of centers, collinear, circumscribed polygon, inscribed polygon.

2. The following postulates will be committed to memory and the student will demonstrate this commitment by writing the postulates:

   a. A line drawn from the center of a circle to a point of tangency is perpendicular to the tangent passing through the point of tangency. Also if a line is perpendicular to a radius at its intersection with its circle, the line is tangent to the circle.

   b. Two circles are congruent if, and only if, their radii or diameters are equal.

3. The student will discuss the following theorems and apply the theorems to the solution of related problems:

   a. The measure of an inscribed angle is equal to one-half of the measure of its intercepted arc.

   b. A line drawn from the center of a circle perpendicular to a chord bisects the chord and its arc.

   c. The perpendicular bisector of a chord passes through the center of the circle.

   d. In a circle, parallel lines intercept equal arcs.

Chapter 7 - Inequalities

1. The student will demonstrate his mastery of the algebraic axioms on page 139 by applying these axioms to both linear and quadratic equations involving real numbers.

2. The student will write the following definition: If a and b are real numbers, $a < b$, there is a positive real number p such that $b = a + p$. If a and b are real numbers, $a > b$ if, $b < c$.

3. The student will use the following postulates to prove selected theorems:

   a. Exactly one of three relations is true:
   either $a < b$, $a = b$, or $a > b$.

   b. The whole is greater than any of its parts.

   c. The sum of any two sides of a triangle is greater than the third side.

4. Using definitions, postulates, and previously proved theorems, the student will prove the following theorems:

   a. If $a < b$, then $a + c < b + c$

   b. If $a < b$ and $c = d$, then $a + c < b + d$

   c. If $a < b$ and $c = d$, then $a - c < d - b$

   d. If $a < b$ and $c > o$, then $ac < bc$

   e. If $a < b$ and $c < o$, then $ac > bc$

   f. If $a < b$ and $b < c$, then $a < c$

   g. If $a < b$ and $c < d$, then $a + c < b + d$

5. The student will use the theorems of inequalities to solve linear and certain quadratic inequalities for the indicated variable when the variable belongs to the set of real numbers.

6. The student will demonstrate his mastery of the following theorems by applying the theorems to the solution of selected problems:

   a. In a triangle, an exterior angle is greater than either nonadjacent interior angle.

   b. If two sides of a triangle are unequal, the angles opposite these sides are unequal in the same order.

Chapter 8 - Geometric Loci

1. The student will write the definitions for: locus, circle, circumcenter of a triangle, incenter of a triangle, orthocenter of a triangle, centroid of a triangle.

2. The student will use the following theorems as an aid to solve related problems:

   a. The locus of all points equidistant from two points is the perpendicular bisector of the segment joining the two points.

   b. The locus of all points equidistant from the sides of an angle is the angle bisector.

   c. The locus of the vertex of a right triangle with a fixed hypotenuse is a circle with the hypotenuse as diameter.

d. The perpendicular bisectors of the sides of a triangle meet at a point which is equally distant from the vertices of the triangle.

e. The angle bisectors of a triangle meet at a point which is equidistant from the sides of the triangle.

f. The altitudes of a triangle meet in a point (orthocenter).

g. The medians of a triangle meet in a point. (Centroid).

h. The point of intersection of the medians of a triangle is 2/3rds of the way from the vertex to the midpoint of the opposite side.

Chapter 9 - Regular Polygons and Circles

1. The student will write the definitions for: regular polygon, center of a regular polygon, radius of a regular polygon, central angle of a regular polygon, apothem of a regular polygon, and sector of a circle.

2. Using definitions, postulates and previously proven theorems, the student will discuss the following theorems. Additionally, the student will apply these theorems to the solution of related problems.

a. If a circle is divided into equal arcs, the chords of the arcs will form a regular polygon. ($n \geq 2$)

b. If a circle is divided into equal arcs and tangents are drawn to the circle at the endpoints of these arcs, the figure formed by the tangents will be a regular polygon. ($n \geq 2$)

c. A circle can be inscribed in any regular polygon.

d. A circle can be circumscribed about any regular polygon.

e. An opothem of a regular polygon bisects its respective side.

f. The area of a regular polygon is equal to the product of one-half its apothem and its perimeter.

g. A central angle of a regular polygon is given by $x = \frac{360^{\circ}}{n}$, where n is the number of sides of the polygon.

Chapter 10 - Omitted

Chapter 11 - Coordinate Geometry

1. The student will draw, construct, classify or define the following: axes, x-axis, y-axis, origin, coordinates, graph, plotting points, abscissa ordinate, quadrants, ordered pair, undirected distance, graph of an equation, linear equation, slope of a non-vertical segment, point-slope form of a line and reciprocals.

2. The student will derive and apply the point-slope form of the straight line, and write the equation of the line passing through given points.

3. The student will graph selected linear equations of the form $Ax + By = C$.

4. The student will derive and apply the formula for the undirected distance between any two points: $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$.

5. The student will use coordinate geometry to show the following:

   a. The diagonals of a rectangle are equal.

   b. The perpendicular bisector of the base of an isosceles triangle passes through the vertex.

   c. The opposite sides of a parallelogram are equal.

6. The student will show and apply the concept that given coordinates (x_1, y_1) and (x_2, y_2), the midpoint of the segment joining the coordinates can be written with $\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$

Constructions

Using a straight edge and compass only, the student will do the following constructions:

1. Construct segment CD congruent to given segment AB.
2. Bisect a given segment.
3. Construct $\angle ABC$ congruent to given $\angle DEF$.
4. Bisect a given angle.
5. Given $\triangle ABC$, construct $\triangle DEF$ congruent to $\triangle ABC$.
6. Construct the perpendicular bisector of a given segment.
7. Construct a perpendicular to a given line through a given point.
8. Construct a parallel to a given line through a given external point.
9. Divide a segment into a given number of congruent segments.
10. Construct an equilateral triangle with x as the length of a side.
11. Construct an inscribed circle in a given triangle.
12. Construct an isosceles right triangle.

MATH 033

BEHAVIORAL OBJECTIVES FOR ALGEBRA III

Chapter 1: Properties of Real Numbers

1. Given a set of elements, the student will list all the possible subsets of the set.

2. Given a set of real numbers, the student will list those numbers of the set which are integers, rational, irrational, natural, or real.

3. Given two or more finite sets of elements, the student will perform the operations of union and intersection on these sets.

4. Given two or more finite sets of elements, the students will write the cardinality of each set, the cardinality of the union of the sets, and the cardinality of the intersection of the sets.

5. Given several mathematical statements, the students will justify each statement with laws or properties of the real number system.

6. Given one or more sets of real numbers, the student will graph each set, or the union of the sets, or the intersection of the sets.

Chapter 2: Polynomials

1. Given an open expression such as $2x - \left[x - (x - 1) + 2\right]$, $\frac{4xy^3 \; x^2y}{xy^2}$ $(xy \neq 0)$, $a^{2n} \; a^{n+1}$, the student will write the simplest expression equivalent to the given expression.

2. Given any polynomial such as $(2x^2 + 11x - 21)$, $(6x^{3n} + 3x^n)$, and $(2xy + 2x^2 + y + x)$, the student will factor the polynomial completely.

3. Given polynomials in the form $P(x) = 3x^2 - 4x + 2$ with specified values such as $P(-2)$, the student will write the value of the polynomial at that specified value of the variable.

Chapter 3: Fractions

1. Given a fraction similar to $\frac{1}{a-b}$, the student will write the conditions on a and b for the fraction to represent a positive number and a negative number.

2. Given a simple algebraic fraction, such as $\frac{8x^3 + y^3}{4x^2 - y^2}$, the student will reduce the fraction to lowest terms.

3. Given a rational expression in the form $\frac{6x^2 + x + 13}{2x + 3}$, the student will write in the form

$$Q(x) + \frac{R}{2x + 3}.$$

4. Given rational expressions of the form $\frac{y^3 + 3y^2 - 2y - 4}{y + 1}$,

the student will use synthetic division to write the quotient as a polynomial.

5. Given a complex algebraic fraction such as $\frac{a + b + \frac{1 - \left(\frac{a}{b}\right)^2}{a - b}}{b^2}$,

$\frac{2y - 6}{y + 2x} \div \frac{4y - 12}{2y + 4x}$ or $\frac{x + \left(\frac{1}{x}\right)}{1 - \left(\frac{1}{\frac{1 + 1}{x - 1}}\right)}$

the student will write the expression as a single fraction in lowest terms.

Chapter 4: Exponents, Roots, and Radicals

1. Given expressions such as $(-27)^{\frac{2}{3}}$, $\frac{(a^{-1}b^2)^{-1}}{c^0 d^{-3}}$, $(x^{-2} + y^{-3})^{-1}$, $(2 - i)(3 + 4i)$, and $6\sqrt{8x^3y^6}$, the student will write the simplest expression equivalent to the given form.

2. Given fractional expressions such as $\sqrt{5} + \sqrt{\frac{1}{5}}$ or $\sqrt{x + 1} - \frac{x}{\sqrt{x + 1}}$, the student will simplify the expression, to include rationalizing the denominator.

3. Given equations such as $\sqrt{(x - 3)^2} = 4$, the student will write the restrictions on the variable x.

4. The student will perform arithmetic operations with complex numbers by simplifying expressions such as $(4 - 3\sqrt{-1}) + (2 + \sqrt{-1})$, $(5 - \sqrt{-12}) - (3 + \sqrt{-27})$, $(3 + 2\sqrt{-5})(3 - \sqrt{-5})$, $\frac{3i}{1 - i}$.

Chapter 5: First-Degree Equations and Inequalities-One Variable

1. Given a first degree equation in one variable, the student will write the solution set.

2. Given an equation in the form $\frac{x - y}{3} = \frac{x + y}{2}$, the student will write the equivalent equation solving for y in terms of x.

3. Given an inequality in the form $\frac{x - 3}{4} \leq 6$, the student will write the solution set for the variable and graph the solution set on a number line.

4. Given an open sentence of the form $|2x + 1| = 7$ or $|x - 2| \leq 5$, the student will write the solution set for the variable and graph the solution set on a number line.

5. Given a word problem which states a relationship between numbers, the student will set up the requisite equation or inequality and will write the solution to the equation and inequality.

Chapter 6: Second Degree Equations and Inequalities - One Variable

1. Given a quadratic equation in one variable, the student will write the truth set for the equation. Sample equations are: $2x = 6 - 8x^2$, $x(2x - 3) = -1$, $\frac{x^2}{6} + \frac{x}{3} = \frac{1}{2}$.
The student will be required to write the given equation in standard form and for appropriate equations be required to find the truth set by a designated method, either by factoring the second degree polynomial, by completing the square, or by using the quadratic formula. If the truth set is a subset of the real numbers, he may be required to graph the solution set on the real number line.

2. Given the solution set of a quadratic equation, such as $\{-2, \frac{3}{4}\}$ or $\{3i, -3i\}$, the student will write the equation in standard form with integral coefficients.

3. Given an equation such as $kx^2 + 4x + 1 = 0$, or $x^2 - kx + 9 - 0$, or $x2 + 2x + k + 3 = 0$, the student will determine the values of k for which the equation has two real solutions, one real solution or no real solutions.

4. Given an equation involving radicals, such as $\sqrt{x + 2} + 4 = x$, $\sqrt[3]{x} = -3$, $\sqrt{y - 5} - \sqrt{y} = 1$, the student will write the solution set for the equation.

5. Given an equation which is quadratic in form, such as $y - 2\sqrt{y} - 8 = 0$, $y^{2/3} - 2y^{1/3} - 8 = 0$, $z^{-2} + 9z^{-1} - 10 = 0$, the student will write the solution set for the equation.

6. Given a quadratic inequality such as $x^2 + 4x < 5$ or an inequality involving fractions such as $\frac{x}{x-2} > 5$, the student will write the solution set to the inequality and also graph this solution set on the real number line.

7. Given a word problem for which the mathematical model is a quadratic equation, the student will write an appropriate equation and determine the solution to the given physical situation.

Chapter 7: Functions and Graphs I

1. Given two finite sets, such as $A = \{2,4,6\}$ and $B = \{1,3,5\}$, the student will write the set of ordered pairs generated by the Cartesian Product AxB.

2. On a rectangular coordinate reference system, the student will graph a set of ordered pairs, such as $\{(x,y) \mid y = 3x + 1, x \in \{1,2,3\}\}$, $\{(x,y) \mid x < 0 \text{ and } y < 0\}$, $\{(x,y) \mid y = 3x + 1\}$ $\{(x,y) \mid y = x - 2 \text{ and } x \geq 0\}$, $\{(x,y) \mid y = 3x + 1, x \in J\}$. Note: Unless otherwise specified the replacement set for any variable is R.

3. Given a relation such as $\{(2,3), (3,5), (3,6) (4,6), (5,5)\}$ the student will write the domain and range of the relation and state whether or not the relation is a function.

4. Given a function such as $f(x) = x^2 + 2x$, the student will evaluate the function for one or more values in the domain, such as find $f(-1)$, $f(\frac{1}{4})$.

5. Given two ordered pairs of numbers, the student will write the distance between the corresponding points in a plane and the slope of the line determined by these two points.

6. Given the coordinates of a point and the slope of a line through that point, the student will write the equation of that line. As specified, the student will write the equation either in standard form, point-slope form, or slope-intercept form.

7. Given the coordinates of two points in a plane, the student will write the equation of that line, either as specified in standard form, point-slope form, or slope-intercept form.

8. Given a linear equation in two variables, such as $3x - 6y = 10$, the student will write the slope of the graph of this equation and the x and y intercepts.

9. Given an equation of a line and the coordinates of a point not on the line, the student will write the equation of a line passing through the given point and parallel (perpendicular) to the graph of the given equation. Additionally the student will draw the graph of both the given equation and the required equation.

10. Given a set of ordered pairs such as $\{(x,y) \mid x > 2\}$, $\{(x,y) \mid y > x\} \cap \{(x,y) \mid y > 2\}$, $\{(x,y) \mid x \leq 2\} \cap \{(x,y) \mid y \leq 2\}$, the student will graph this set on a rectangular coordinate reference system.

Math 09
Behavioral Objectives for Trigonometry

Chapter I

a. Given two sets the student will be able to write the intersection or union of the sets using set notation.

b. The student will be able to write the subsets, intersection, and union of the set of real numbers.

c. Given any real number the student will be able to determine its absolute value.

d. The student will be able to construct a Rectangular Coordinate system and plot points and lines in this system.

e. The student will be able to determine the distance between two points plotted in a rectangular coordinate system.

f. Given several equations the student will be able to determine which equations are functions and which are only relations.

Chapter II

a. The student will be able to define and use the radian measure of angles.

b. The student will be able to define the six basic trigonometric functions when the angle has its terminal side in any of the four quadrants of a rectangular coordinate system.

c. The student will be able to compute the values of the six basic trigonometric functions for angles of: 0^{o}, 30^{o}, 45^{o}, 60^{o}, 90^{o}, and related angles.

d. The student will be able to write any number in scientific notation.

e. The student will be able to convert any angle in standard position into its reference angle and use tables of all six functions to obtain the required value.

f. Assuming a linear relationship the student will be able to interpolate values for increased accuracy.

Chapter III Trigonometric Functions Defined on the Real Numbers

a. The student will be able to define a circular function.

b. He will be able to show the relationship between trigonometric and circular functions.

c. Given a real numbered value for one of the six trigonometric functions the student will be able to solve for the value of the five remaining functions, (i.e., given sin X = .2, solve for cos X = _____, tan X = ____, etc.).

d. The student will be able to evaluate circular functions; (i.e., sin $\frac{41\pi}{5}$ = sin $\frac{\pi}{5}$).

e. The student will be able to determine the values of circular functions using table II of Appendix A of the text. (i.e., sin 0.65 = .6052, cos 0.65 = 0.7961).

f. Given a more exact value for the function than the argument in the table, the student will use linear interpolation to obtain the corresponding value.

Chapter IV

a. The student will be able to graph the six basic trigonometric functions.

b. The student will be able to graph the inverse trigonometric functions.

Chapter V

a. The student will know 12 basic trigonometric indentities and the Pythagorean Theorem.

b. Using the 12 basic trigonometric identities the student will be able to show expressions equivalent, and prove identities.

c. Using the known trigonometric identities the student will develop the double-angle and half-angle formulas.

d. The student will be able to solve conditional trigonometric equations.

Chapter VI

a. Given the degrees of one acute angle and the length of one side of a right triangle the student will use trigonometric ratios to determine the remaining sides. He will use his knowledge of triangles to determine the other acute angle.

b. The student will derive the Law of Cosines to determine the length of a side of a non right triangle. He will solve elementary problems using this law.

c. The student will prove that the area A of a triangle with sides a, b, and c and semiperimeter $s = \frac{1}{2}(a+b+c+)$ is $A = \quad s(s-a)(s-b)(s-c)$

d. The student will derive the Law of Sines and use this law to solve elementary problems.

COURSE CONTENT

1. Real Number Sets and Functions

   a. Set Language
   b. Order
   c. Absolute Value
   d. Cartesian Coordinate System and the Distance Formula
   e. Relations and Functions
   f. Some Properties of Functions

2. Trigonometric Functions

   a. Angles
   b. Functions defined on Angles
   c. Trigonometric Functions of Special Angles
   d. Evaluation of the Trigonometric Function of any Angle.

3. Trigonometric Functions Defined on Real Numbers

   a. Circular Functions
   b. Some Properties of the Trigonometric Functions
   c. Evaluation of the Circular Function

4. Graphs of the Trigonometric Functions and Inverse Functions

   a. Graphs of Sine and Cosine Function
   b. Graphs of Tangent, Cotangent, Secant and Cosecant Functions
   c. Inverse Functions
   d. Inverses of the Trigonometric Functions

5. Trigonometric Identities and Equations

   a. Trigonometric Identities Involving One Number or Angle
   b. Difference and Sum Identities
   c. Double and Half-Angle Identities
   d. Trigonometric Equations

6. Triangle Trigonometry

   a. Right Triangles
   b. Law of Cosines
   c. Law of Sines

DEVELOPMENTAL FOLLOW-UP STUDY

STUDENT PERFORMANCE IN ENGLISH 08-READING IMPROVEMENT

FALL 1976 - SPRING 1977

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June, 1979

Developmental Follow-up Study
Student Performance In English 08-Reading Improvement
Fall 1976 - Spring 1977

INTRODUCTION

The present reading program (English 08--Reading Improvement) which is being evaluated in this brief is designed to assist each student in realizing and overcoming his individual reading problems. It is primarily concerned with the development of the reading ability of college freshmen who have demonstrated inadequate preparation in the areas of comprehension and vocabulary. Students who reveal a reading deficiency and do not meet curriculum or course entrance requirements are, in most cases, required to enroll in the Developmental Studies Program. The Nelson-Denny Reading Test is utilized by the Counseling Center to determine proper placement.

If a student scores below the 10.9 grade level, he is required to enroll in the English 08 (Reading Improvement) course. Upon completion of the course requirments (see Appendix A), the individual student should be prepared for those courses which require highly developed and flexible reading skills.

Numerous studies reveal that students who have not mastered the essential reading skills experience great difficulty in college-level courses. Therefore, students who are required to take English 08 are restricted in the courses they may choose.

The behavioral objectives for the English 08 course are given below:

Goals

By taking this course the student will:

1. Become aware of his own strengths and weaknesses in reading.
2. Be able to successfully pronounce or find pronunciations for new words.
3. Be able to utilize contextual and structural clues in the determination of the meaning of new words.
4. Be able to summarize the main ideas of a passage.
5. Be able to utilize a dictionary with confidence.
6. Be aware of study techniques which have been demonstrated to be effective.
7. Have begun to acquire a more extensive vocabulary.
8. Understand the benefits which can be realized from a broad, diverse vocabulary.
9. Be able to recognize and interpret correctly figurative language.
10. Be aware of the need for the achievement of rate flexibility.
11. Understand the influence of rate on comprehension.
12. Be able to draw correct conclusions or inferences from information which is given.
13. Have more confidence in his ability to take tests.
14. Be familiar with the more common forms of paragraph development.
15. Be knowledgeable of the various kinds of literature.

16. Be aware of the basic structural elements in fiction and non-fiction.
17. Be able to differentiate between appeals to reason and appeals to emotion or prejudices in written material.
18. Have developed a measure of confidence in his reading ability.
19. Be able to follow the sequential development of a story.
20. Be able to comprehend accurately at the literal and interpretive level college level material.

Required Textbooks and Materials

1. Brown, James I. Programmed Vocabulary. New york, New Century, 1971.
2. Gilbert, Doris W. The Turning Point in Reading. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1969.
3. Spiral bound notebook for lab folder.
4. Loose leaf notebook. Students will be given supplementary materials to assist them in the course. They should be filled with daily class notes as received and referred to before taking a test.

Classroom

The classroom activities will include weekly vocabulary and comprehension quizzes, lectures and informal discussions, and assorted skill building activities.

Grading System

In the classroom, letter and number grades will be earned on tests and quizzes. Following is the scale which will be employed therin.

100 - 95	A
94 - 85	B
84 - 76	C
75 - 70	D
69 - 1	F

In order for the student to satisfactorily complete the course, he must have accumulated an overall average of 76 or "C" for the lecture portion of the course in addition to the lab requirements. Missed grades will be recorded as zeroes and averaged in with the grade.

Lab

The laboratory portion of the course attempts to allow each student the opportunity to work in those reading sub-skill areas in which the student has revealed an apparent weakness. A Diagnostic Test will be administered during the first week of classes. The results of this test will determine those areas in which each student displays strength or weakness. Students who score 80 or above on a particular sub-test will be viewed as adequately skilled in that area. Scores below 80 will be considered

as indicators of the need for further development. After a student performs exercises in an area of weakness, he will be administered an evaluation test. On this test a student must score at least 80. If a student fails to make a score of 80 the first time, he may take another form of the same test. If a student still does not make an acceptable score, he will none-the-less proceed to another area. In all there are twelve skill areas in which the students may work. Among these are Context, Inference, Dictionary, Sequence, and Paragraph Meaning or Central Idea. In order to successfully meet course requirements, a student must have passed 10 of the 12 areas. Lab tests will normally be administered during the last half of each lab class. Students will work individually with constant evaluation by the instructor.

Re-Enroll Students

A re-enroller is one who has not completed all course objectives but has worked with diligence and has made significant progress. The judgment as to whether or not significant progress has been made need not necessarily be based upon objectives mastered, tests passed, or units completed, but may be based upon the student's individual progress as compared to his initial competency.

In order to receive credit for lab tests passed in preceding quarters, a student must re-enroll in English 08 before two quarters have lapsed. No credit will be given if it has been more than two quarters since the course was last taken. A re-enroll student does not receive credit for the lecture portion of the course from previous quarters.

If lab requirements are completed before the end of the quarter, the student will be encouraged to work on supplementary materials for self-improvement.

PURPOSE

In order to determine the effectiveness of the present English 08 course and to provide a useful instrument for future evaluation, the following questions were answered:

1. How successful were students who enrolled in English 08?

    A. Of the total number of students who initially enrolled in English 08, what was the:

        1. Total number and percentage of successes?

        2. Number and percentage of successes in the first attempt?

        3. Number and percentage of successes in the second attempt?

        4. Number and percentage of successes in the third attempt?

B. Of the number of students who enrolled in English 08 each quarter, what was the:

1. Number and percentage of successes in the first attempt?

2. Number and percentage of successes in the second attempt?

3. Number and percentage of successes in the third attempt?

2. Of those students who received a grade of S, R, or U in any of the three quarters, what percentage completed the course with a grade of S?

3. Is there a significant correlation between the Nelson Denny test scores and the GPA for those students who enrolled in English 08?

4. Into what reading grade level ranges did the group of students score when they were administered the Nelson Denny test?

A. Which grade level range(s) proved to be the most successful in English 08?

5. What was the correlation between the course grades in English 08 and the Nelson Denny test scores?

6. What was the average GPA for former English 08 students?

7. What was the frequency GPA for former English 08 students?

PROCEDURE

Due to the limited data that was available when the study was begun, it was necessary to formulate pertinent questions that would reveal a greater insight into our present reading program which consists of one course, English 08 (Reading Improvement).

A majority of the raw data used in this study was furnished by Dr. Stuart Bounds, Director of Institutional Research.

The computer print-out from Dr. Bounds listed the first four letters of the last name of 292 students who enrolled in Thomas Nelson Community College for the first time in Fall 1976. The list included the social security number and letter grades received in English 08 between Fall 1976 and Spring 1977.

The full name and the Nelson Denny test score for each of these 292 (first time enrollers in the course) were obtained from the Counseling Center. However, pertinent information for four of the students listed on the printout could not be located; therefore, these name have been excluded from the brief. It should also be noted that 48 Nelson Denny test scores were unavailable for statistical purposes in the Grade Percent Distribution Chart (Table 1 on page 107).

From the available data gathered on 288 students (292 minus the 48 unavailable Nelson Denny test scores), several questions were asked concerning the effectiveness of the reading program on student performance.

FINDINGS

1. How successful were students who enrolled in English 08?

   A. Of the total number who enrolled:

      58% (168 out of 288) of the total number of students who initially enrolled in English 08 were successful.

      38% (109 out of 288) of the students who initially enrolled in English 08 were successful in the first attempt.

      14% (41 out of 288) of the students who initially enrolled in English 08 were successful in the second attempt.

      6% (18 out of 288) of the students who initially enrolled in English 08 were successful in the third attempt.

   B. Of the number of students who enrolled each quarter:

      38% (109 out of 288) of the students who initially enrolled in English 08 were successful in the first attempt.

      49% (41 out of 83) of the students who enrolled in English 08 the second quarter were successful.

      50% (18 out of 36) of the students who enrolled in English 08 the third quarter were successful.

2. Of those students who received a grade of S, R, or U in any of the three quarters in English 08, what percentage completed the course with a grade of S?

   70% (168 out of 240) of the students who received a grade of S, R, or U in English 08 completed it with a grade of S.

3. Is there a significant correlation between the Nelson Denny test scores and the GPA for those students who enrolled in English 08?

   A Chi square test of independence was used to see if the relationship between the Nelson Denny test scores and the GPA for those students who enrolled in English 08 was statistically significant. The test yielded statistically insignificant Chi squares at the .05 confidence level.

4. Into what reading grade level ranges did the group of students score when they were administered the Nelson Denny test? (Refer to Table I, page 107)

   75 of the 240 students scored within the 7.0-7.9 grade level range.

   80 of the 240 students scored within the 9.0-9.9 grade level range.

5. What was the correlation between the course grades in English 08 and the Nelson Denny Test scores?

   75% (60 out of 80) of the students who scored within the 9.0-9.9 grade level range and 72% (26 out of 36) of the students who scored within the 10.0-10.9 grade level range received a grade of S.

   41% (31 out of 75) of the students who scored within the 7.0-7.9 grade level range and 31% (14 out of 45) of the students who scored within the 8.0-8.9 grade level range received a grade of R or U.

   25% (19 out of 75) of the students who scored within the 7.0-7.9 grade level range and 22% (10 out of 45) of the students who scored within the 8.0-8.9 grade level range received a grade of W.

6. What was the average GPA for former English 08 students?

   The average GPA for former English 08 students was as follows:

Fall	Winter	Spring
2.341	1.888	2.212

7. What was the frequency GPA for former English 08 students?

The frequency GPA for former English 08 students was as follows:

Spring 1977: 0.00 - 1.49 (32), 1.50 - 1.99 (25), 2.50 - 2.99 (14), 3.00 - 3.49 (27), 3.50 - 4.00 (14)

CONCLUSIONS

Over one-half, 58% (168 out of 288), of the students who initially enrolled in English 08 were successful. As indicated by the data, the majority, 52% (38 + 14), of these students were successful within the first or second attempts. However, in considering only the students who completed the course, 70% (168 out of 240) completed it with a grade of S.

A Chi square test of independence was used to see if the relationship between the Nelson Denny test scores and the GPA for those students who enrolled in English 08 was statistically significant. The test yielded insignificant Chi squares at the .05 confidence level.

The data also indicated a "double humped" frequency distribution evenly distributed between the 9.0-9.9 and the 7.0-7.9 grade level ranges.

A Chi square test of independence was used to see if the relationship between the Nelson Denny test scores and the course grades received in English 08 was statisically significant. The test yielded statistically significant Chi squares at the .05 confidence level (see attached chart).

Since the Grade Percentage Distribution Chart found on page indicates that 75% (60 out of 80) of the students who scored within the 9.0-9.9 grade level range and 72% (26 out of 36) of the students who scored within the 10.0-10.9 grade level range received a grade of S, it seems that our present reading program is most beneficial to those students who are reading on a 9th or 10 grade level.

It should be carefully noted that 41% (31 out of 75) of the students who received a grade of "R or U" and 25% (19 out of 75) of those students who received a grade of "W" scored within the 7.0-7.9 grade level range. Those students who scored within the 7.0-7.9 grade level range on the Nelson Denny reading test seem to be receiving less benefits from the English 08 course than those students who scored within the higher grade level range.

The students who successfully completed English 08 maintained an average GPA of 2.1.

RECOMMENDATIONS

1. A careful analysis of data compiled over a five-quarter period should be made in order to determine if English 08 students are more successful in the first, second, or third attempts.

2. Additional courses should be developed to meet the needs of those students who are reading below the 9th grade level.

3. In lieu of using the Nelson Denny test in the initial screening procedure, the reading department should select a test which will identify grade level ranges for 3.0 to 12.0. This test should be administered to students prior to their placement into a developmental reading course.

For Future Study

As a result of having analyzed the reading data for this pilot study and having realized the limitations of the data, it was decided that additional information should be gathered in order to devise an instrument for future and continuous evaluation of the program.

Interviewing sessions should be arranged with former English 08 students in order to obtain answers to the following questions:

A. How many students completed the English 08 course and decided to enter a curriculum?

B. Does the student feel that he would not have entered a curriculum without having taken English 08?

C. How many students felt that the English 08 course was beneficial to them in credit courses?

D. How many students felt that the English 08 course contributed to their success on the job?

Additional data should be gathered to answer the questions that are stated below.

A. On what reading level are students most likely to succeed when enrolled in credit courses?

B. What percentage of the successful students in English 08 enrolled in credit courses (excluding GENL 100 and PHED)?

C. What was the grade distribution for the successful English 08 students who enrolled in Biology 101, Economics 147, Engineering 101, English 101, History 101, Mathematics 161, Secretarial Science 121, Sociology 101, and Nursing 111 compared to a non-developmental studies group?

D. How many of the English 08 students completed the following programs:
   a. a transfer program?
   b. a two-year degree program?
   c. a two-year diploma program?
   d. a certificate program?

E. How many of the developmental studies students were enrolled in English 08 and English 01 concurrently, and how well did they perform in these courses?

F. How well do students who satisfactorily complete English 08 and English 01 perform in credit courses in comparison to those who only take English 08?

Appendix A

ENGLISH 08 PERFORMANCE OBJECTIVES

Performance Objectives for Lab

Context:

Given sentences each of which contains a word foreign to the reader's vocabulary, the student will select the correct meaning of at least 80% of those words.

Syllabication:

Given a group of words, the student will choose the correct syllable division for at least 80% of those words.

Structure:

Given sentences each of which contains an underlined word, the student utilizing structural clues will select the current meaning of at least 80% of the underlined words.

Dictionary:

1. Pronunciation: Given groups of diacritical symbols, each student, utilizing a pronunciation key, will determine with 80% efficiency which groups of symbols represent actual words.

2. Meaning: Given a group of sentences, each containing an underlined word, the student must choose from a selection from a dictionary the appropriate meaning for at least 80% of the underlined words.

Sound:

Given a group of words, each with one or more underlined letters, the student will determine, with at least 80% efficiency the word which contains the sound represented by the letters underlined in the first word.

Sequence:

Given groups of sentences taken from a passage, the student after reading the passage will select with at least 80% efficiency those sentences from each group which are not in proper chronological sequence.

Sentence Meaning:

Given a set of sentences each followed by a group of sentences, the student will select with at least 80% accuracy, the sentence from each group which most nearly corresponds in meaning to the first sentence.

Paragraph Meaning:

Given a group of paragraphs to read, the student will determine with at least 80% efficiency, from a group of statements taken from each paragraph: 1. the central idea of the paragraph, 2. a detail supporting the central idea, 3. a detail not included in the paragraph, 4. a statement which covers more than is included in the paragraph , and 5. a detail which is in the paragraph but is not supportive of the central idea.

Inferences:

Given a number of paragraphs each followed by a group of sentences, the student will determine with at least 80% efficiency which sentences can be correctly inferred from each of the paragraphs.

Judgments:

Given a group of paragraphs, each followed by a set of statements, the student will determine with at least 80% efficiency which of the statements represent logical conclusions based upon the information supplied in the paragraphs.

Figurative Language:

Given a group of sentences, each containing usage of a figure of speech, the student will determine with at least 80% efficiency the meaning of the figure of speech and what is being compared in the statements.

Imagery:

Given several paragraphs containing various forms of imagery, the student will answer questions pertaining to the imagery utilized in each paragraph with at least 80% efficiency.

Classroom

The classroom activities will include weekly vocabulary and comprehension quizzes, lectures and informal discussions, and assorted skill building activities.

Performance Objectives for the Classroom:

1. Given vocabulary lists at regular intervals, students will demonstrate over the course of the quarter 76% efficiency in correct syllable division, correct spelling, and the knowledge of correct word meanings.

2. Given sentences, paragraphs, and short articles to read, the student will demonstrate with 76% efficiency the ability to extract the literal meaning of the selections.

3. Given assorted paragraphs to read, the student will select with 76% accuracy the pattern of development used in the various paragraphs.

4. Given information concerning the kinds of literature and their constituent elements, the students will be able to define and discuss these forms with accuracy.

5. Given a short story, the student will accurately summarize the events of that story.

6. Given sentences or paragraphs containing various forms of appeal, the student will select with at least 76% accuracy, the type of appeal utilized in each selection.

7. Given two statements, the student will derive with 76% accuracy a correct and logical conclusion.

8. Given information relating to methods of study, the student will exhibit, through his behavior, knowledge and application of effective study techniques.

9. Given information relating to the reading process, the student will demonstrate, through his behavior, knowledge of his strengths and weaknesses and effective efforts toward building on the former and reduction of the latter.

10. Given exposure to oral presentation, the student will demonstrate effective listening habits.

Final Examination

Since the final examination, which is usually teacher made, is an integral part of the course requirements, students who fail to attend the final examination session may not receive a satisfactory grade.

TABLE I
GRADE PERCENT DISTRIBUTION--NELSON DENNY TEST GRADE LEVEL RANGES
FALL 1976--SPRING 1977

RANGES

Grade	7.0-7.9	8.0-8.9	9.0-9.9	10.0-10.9	11.0-11.9
S	25/75 = 33%	21/45 = 46%	60/80 = 75%	26/36 = 72%	3/4 = 75%
R or U	31/75 = 41%	14/45 = 31%	14/80 = 18%	5/36 = 13%	---------
W	19/75 = 25%	10/45 = 22%	6/80 = 8%	5/36 = 13%	1/4 = 25%
Total number of students in each range	75	45	80	36	4

Grade Distribution of English 08 Students

Fall 1976 - Spring 1977

1. No. receiving following grades:

S	R	U	W	Total	
109	126	5	48	288	(initial enrollment)

2. Grade in Winter, 1977 by grade received in Fall, 1976:

		Winter Grade				
		S	R	U	W	TOTAL
	R	40	5	26	2	73
Fall	U	0	0	1	0	1
	W	1	2	1	3	7
Total		41	7	28	5	81

3. Grade in Spring, 1977 by following subgroups:

		Spring Grade				
Fall	R	S	R	U	W	TOTAL
		10	0	5	0	15
Fall	U	0	0	1	0	1
Fall	W	0	0	3	0	3
Winter	R	2	0	1	0	3
Winter	U	6	0	4	4	14
Winter	W	0	0	0	0	0
Total		18	0	14	4	36

DEVELOPMENTAL FOLLOW-UP STUDY

STUDENT PERFORMANCE IN ENGLISH 01 - VERBAL STUDIES

FALL 1976 - SPRING 1977

Developmental Follow-up Study
Student Performance in English 01-Verbal Studies
Fall 1976 - Fall 1977

INTRODUCTION

English 01, Verbal Studies, is a developmental course designed to instruct students in the fundamentals of grammar, mechanics, punctuation, and paragraph writing for successful entry into the English course required by their curriculum: English 100, English 101, English 111, or Speech and Drama 136. The learning objectives for the course are covered in class and/or in lab. Because English 01 prepares students for one of several different curricula, the requirements for students differ. For English 100 and 101 a student must master the course paragraphs at a C- achievement level and the lab text, English 2600, at an 80% level. For English 111 a student must master the course paragraphs at a B- achievement level and the lab texts, English 2600 and the first half of English 3200, at an 80% level. It should also be noted that weaker students were frequently started in English 2200 in addition to the aforementioned requirements.

PLACEMENT

Placement of students into Verbal Studies was done primarily on the basis of high school transcripts and with occasional reference to the Nelson Denny Reading Test for borderline cases. If a student graduated from high school with a C or better in English, he was placed in the credit English required by his curriculum. Some exceptions to these guidelines were students who did not graduate, graduated more than ten years previous to matriculation at Thomas Nelson, held a General Education Diploma (G.E.D.), or proved to be a special case because of a great discrepancy between test scores and high school English grades. In these instances the counselor and the student discussed all possibilities with the counselor generally suggesting retesting or an alternate test. After this conference and/or testing session, the counselor and student would reach a decision that both considered best for the student's educational career, which was usually enrollment in English 01. In a few instances, students who had high school English grades and test scores sufficient for credit English enrolled in English 01 to build confidence or form a sound foundation before entering their credit English. Others were sent to English 01 after initial diagnostic testing on the first day of class in their credit English (in most cases a writing sample was the testing device), and in some rare instances, Verbal Studies students were recommended to enroll in their credit English after initial diagnostic testing in English 01 on the first day of class (the English 2600 Pretest and a sample paragraph were the testing devices).

PURPOSE

The specific responsibility of English 01, Verbal Studies, is the preparation of students who lack necessary writing skills for successful entry into their required English (English 100, 101, or 111). To determine how successful

English 01 is at fulfilling this responsibility, extensive follow-up research is necessary on the performance of English 01 students in English 01, itself; on English 01 students who enter their credit English; and how English 01 students compare to those who enter their credit English without Verbal Studies.

Major Follow-Up Questions:

I. How do students perform in English 01?

II. Of those who completed English 01, how long did it take?

III. What is the attrition rate in English 01? (attrition being defined as those students who never enrolled in their credit English nor re-enrolled in English 01 as of the Fall Quarter of 1977).

IV. How do students who have taken and passed English 01 perform in their required credit English compared to those students who did not have developmental English (those who finished the course)?

PROCEDURE

The majority of statistics presented in this study were derived from raw data, computer printouts of students enrolled in English 01 for the Fall of 1976. These printouts listed, not only the grades of students enrolled in English 01, but also all subsequent attempts at English 01 and entry level credit English courses (i.e. English 100, 101, 111). These printouts, in addition to several specific tables and summaries, were supplied by the Office of Institutional Research under the direction of Dr. Stuart Bounds. From this raw data, statistics were computed by hand to answer specific questions on how developmental English students performed in English 01, their subsequent entry level credit English course, and how this group compared to those students who did not take developmental English. Finally, it should be noted that this listing of English 01 students was not a complete one due to the inability of the Computer Center to reclaim the names of all those registered for Fall of 1976.

Findings:

I. How do students perform in English 01?

A. What percent of English 01 students received an S?

One hundred and eighty-six out of 300 (62%) English 01 students were successful. The breakdown of this total per attempt was 147 out of the 300 (49%) were successful on the first attempt, 36 out of the 300 (12%) on the second, 2 out of the 300 (.6%) on the third, and 1 out of the 300 (.3%) on the fourth. Thus, out of the 186 who were successful, 147 (79%) received an S on their first attempt, and by the second attempt, 183 out of the 186 (99%) were successful.

Thirty-six out of the 75 (48%) students who made a second attempt at English 01 were successful. Of these, 30 out of 61 (49%) who immediately re-enrolled were successful. Of those who did not re-enroll immediately, 6 out of 14 (42.7%) were successful. Of the students who made a third attempt at English 01, 2 out of 12 (16.7%) were successful, and of those who made a fourth attempt, 1 out of 3 (33.3%) were successful.

When considering those students who actually completed English 01, the success rates were as follows. One hundred and eighty-six out of 263 (71.1%) were successful overall. The breakdown of this total per attempt was as follows. On the first attempt, 147 out of 255 (57.7%) were successful, 36 out of 61 (59%) on the second, 2 out of 9 (22.2%) on the third, and 1 out of 3 (33.3%) on the fourth.

B. What percent of English 01 students did not receive an S?

One hundred and fourteen out of 300 (38%) English 01 students received either an R, U, or W.

C. What percent of English 01 students received an R?

One hundred and two out of 300 (34%) received an R on their first attempt.

Of the students who made a second attempt at English 01, 4 out of 75 (5.3%) received an R. Of these, 3 out of the 61 (5%) who re-enrolled immediately received an R. Of those who did not re-enroll immediately, 1 out of 14 (7.1%) received an R.

Of those who made a third attempt, 2 out of 12 (16.7%) received an R, and of those who made a fourth attempt, 1 out of 3 (33.3%) received an R.

D. What percent of English 01 students received a W?

Forty-five out of 300 (15%) received a W on their first attempt.

Fourteen out of 75 (18.7%) received a W on their second attempt. Of these, 9 out of 61 (15%) students who re-enrolled immediately received a W. Of those who did not re-enroll immediately, 5 out of 14 (35.7%) received a W.

Three out of 12 (25%) received a W on their third attempt, and no one received a W on his fourth attempt.

E. What percent of English 01 students received a U?

Six out of 300 (2%) received a U on their first attempt.

Twenty-one out of 75 (38%) received a U on their second attempt. Of these, 19 out of 61 (31%) students who re-enrolled immediately received a U. Of those who did not re-enroll immediately, 2 out of 14 (14.3%) received a U.

Five out of 12 (41.7%) received a U on their third attempt, and 1 out of 3 (33.3%) received a U on their fourth attempt.

(For a visual representation of S, R, W, or U grades per quarter see Graph #I and for a visual representation of the performance of immediate re-enrolls compared to non-immediate re-enrolls see Graphs II and III.)

II. How long does it take a student to complete English 01?

A. What percent of the total enrolled in English 01 completed the course on their first attempt, on their second attempt, on their third attempt, on their fourth attempt?

One hundred and forty-seven out of 300 (49%) completed English 01 on their first attempt; 36 out of 300 (12%) completed English 01 on their second attempt; 2 out of 300 (.6%) completed English 01 on their third attempt; and 1 out of 300 (.3%) completed English 01 on their fourth attempt.

B. What percent of those who successfully completed English 01 did so on their first attempt, on their second attempt, on their third attempt, on their fourth attempt.

One hundred and forty-seven out of 186 (79%) completed English 01 on their first attempt; 36 out of 186 (19.4%) completed English 01 on their second attempt; 2 out of 186 (1.1%) completed English 01 on their third attempt; and 1 out of 186 (.54%) completed English 01 on their fourth attempt.

C. Of those who succeeded, what percent needed more than one attempt to complete English 01?

Thirty-nine out of 186 (21%) needed more than one attempt.

D. What was the average length of time needed for a student to successfully complete English 01?

The average length of time needed for a student to complete English 01 was 1.24 quarters.

III. What is the attrition rate for English 01 students? (attrition being defined as those students who were neither in their credit English nor re-enrolled in English 01 in the Fall Quarter of 1977).

A. What was overall attrition?

One hundred and forty-nine out of 300 (49.7%) were neither in credit English nor re-enrolled in English 01.

B. What is the attrition rate for the first attempt?

One hundred and fourteen out of 300 (38%) were neither enrolled in credit English nor re-enrolled in English 01 as of the Fall Quarter of 1977.

1. What percent of the first attempt attrition were S's?

Forty-three out of 114 (37.7%) were S's.

2. What percent of the first attempt attrition were R's?

Thirty-one out of 114 (27.2%) were R's.

3. What percent of the first attempt attrition were U's?

Five out of 114 (4.4%) were U's.

4. What percent of the first attempt attrition were W's?

Thirty-five out of 114 (30.7%) were W's.

C. What is the attrition for the second attempt?

Thirty-three out of 75 (44%) neither enrolled in their credit English nor re-enrolled in English 01.

1. What percent of the second attempt attrition were S's?

Eleven out of 33 (33.3%) were S's.

a. What percent of those who re-enrolled immediately after their first attempt received an S and did not return?

Nine out of 61 (14.8%) of the S's who re-enrolled immediately did not return.

b. What percent of those who did not re-enroll immediately after their first attempt received an S and did not return?

Two out of 12 (14.3%) of the S's who did not re-enroll immediately did not return.

2. What percent of the second attempt attrition were R's?

One out of 33 (3%) was an R.

3. What percent of the second attempt attrition were U's?

Ten out of 33 (30.3%) were U's.

a. What percent of those who re-enrolled immediately after their first attempt received a U and did not return?

Eight out of 61 (13.1%) who re-enrolled immediately after their first attempt received a U and did not return.

b. What percent of those who did not re-enroll immediately after their first attempt received a U and did not return?

Two out of 14 (14.3%) who did not re-enroll immediately after their first attempt received a U and did not return.

4. What percent of the second attempt attrition were W's?

Eleven out of 33 (33.3%) were W's.

a. What percent of those who re-enrolled immediately after their first attempt received a W and did not return?

Six out of 61 (9.8%) who re-enrolled immediately after their first attempt received a W and did not return.

b. What percent of those who did not re-enroll immediately after their first attempt received a W and did not return?

Five out of 14 (35.1%) who did not re-enroll immediately after their first attempt received a W and did not return.

5. What was the overall attrition rates for those who re-enrolled immediately and for those who did not re-enroll immediately after their first attempt?

a. Twenty-four out of 61 (39.3%) who re-enrolled immediately never returned.

b. Nine out of 14 (64.3%) who did not re-enroll immediately never returned.

PART II

I. How do English 01 students perform in their credit English?

A. What percent of the students who received an S in English 01 enrolled in their required credit English course?

One hundred and thirty out of 186 (70.2%) English 01 students who received an S enrolled in their required credit English course.

B. What percent of the English 01 students who enrolled in their required credit English course completed the course (received a grade of A, B, C, D, or F).

One hundred and ten out of 130 (84.6%) English 01 students completed their required credit English course.

C. How successful were the English 01 students who completed their required English course (received a grade of A, B, C, D, or F).

1. What percent received an A?

a. Overall: 4 out of 110 (3.6%)

b. English 111: None

c. English 101: 4 out of 58 (6.9%)

d. English 100: None

2. What percent received a B?

a. Overall: 29 out of 110 (26.4%)

b. English 111: 14 out of 51 (27.5%)

c. English 101: 14 out of 58 (24.2%)

d. English 100: 1 out of 1 (100%)

3. What percent received a C?

a. Overall: 42 out of 110 (38.2%)

b. English 111: 20 out of 51 (39.2%)

c. English 101: 22 out of 58 (37.9%)

d. English 100: None

4. What percent received a D?

   a. Overall: 18 out of 110 (16.4%)

   b. English 111: 11 out of 51 (21.6%)

   c. English 101: 7 out of 58 (12.1%)

   d. English 100: None

5. What percent received C or better?

   a. Overall: 75 out of 110 (68.2%)

   b. English 111: 34 out of 51 (66.7%)

   c. English 101: 40 out of 58 (70%)

   d. English 100: 1 out of 1 (100%)

6. What percent passed the course?

   a. Overall: 93 out of 110 (84.6%)

   b. English 111: 45 out of 51 (88.2%)

   c. English 101: 47 out of 58 (81%)

   d. English 100: 1 out of 1 (100%)

7. What percent did not pass the course?

   a. Overall: 17 out of 110 (15.5%)

   b. English 111: 6 out of 51 (11.8%)

   c. English 101: 11 out of 58 (19%)

   d. English 100: None

8. What was the G. P. A. for these students who completed their credit English course?

   a. Overall: 1.86

   b. English 111: 1.82

   c. English 101: 1.88

   d. English 100: 3.00

(For a visual representation of the information on the overall success of English 01 students in their credit English, see Chart #1.)

D. What is the success rate for English 01 students who immediately enroll in their credit English course (those who finished their credit course)?

1. What percent received an A?

   a. Overall: 3 out of 68 (4.4%)

   b. English 111: None

   c. English 101: 3 out of 33 (9.1%)

2. What percent received a B?

   a. Overall: 19 out of 68 (27.9%)

   b. English 111: 11 out of 35 (31.4%)

   c. English 101: 8 out of 33 (24.2%)

3. What percent received a C?

   a. Overall: 28 out of 68 (41.2%)

   b. English 111: 13 out of 35 (37.1%)

   c. English 101: 15 out of 33 (42.9%)

4. What percent received a D?

   a. Overall: 10 out of 68 (14.7%)

   b. English 111: 7 out of 35 (20%)

   c. English 101: 3 out of 33 (9.1%)

5. What percent received a C or better?

   a. Overall: 50 out of 68 (73.5%)

   b. English 111: 24 out fo 35 (68.6%)

   c. English 101: 26 out of 33 (78.8%)

6. What percent passed the course?

   a. Overall: 60 out of 68 (88.2%)

   b. English 111: 31 out of 35 (88.6%)

   c. English 101: 29 out of 33 (87.9%)

7. What percent did not pass the course?

   a. Overall: 8 out of 68 (11.8%)

   b. English 111: 4 out of 35 (11.4%)

   c. English 101: 4 out of 33 (12.1%)

8. What is the G. P. A. of those who immediately enroll in their credit English?

   a. Overall: 1.99

   b. English 111: 1.89

   c. English 101: 2.09

For a visual representation of the preceding statistics see Graphs # 2-A, 2-B, 2-C.)

E. What is the success rate for English 01 students who do not immediately enroll in their credit English course?

1. What percent received an A?

   a. Overall: 1 out of 42 (2.4%)

   b. English 111: None

   c. English 101: 1 out of 25 (4%)

   d. English 100: None

2. What percent received a B?

   a. Overall: 10 out of 42 (23.8%)

   b. English 111: 3 out of 16 (18.8%)

   c. English 101: 6 out of 25 (24%)

   d. English 100: 1 out of 1 (100%)

3. What percent received a C?

   a. Overall: 14 out of 42 (33.3%)

   b. English 111: 7 out of 16 (43.8%)

   c. English 101: 7 out of 25 (28%)

   d. English 100: None

4. What percent received a D?

   a. Overall: 8 out of 42 (19.1%)

   b. English 111: 4 out of 16 (25%)

   c. English 101: 4 out of 25 (16%)

   d. English 100: None

5. What percent received a C or better?

   a. Overall: 25 out of 42 (59.5%)

   b. English 111: 10 out of 16 (62.5%)

   c. English 101: 14 out of 25 (56%)

   d. English 100: 1 out of 1 (100%)

6. What percent passed the course?

   a. Overall: 33 out of 42 (78.6%)

   b. English 111: 14 out of 16 (87.5%)

   c. English 101: 18 out of 25 (72%)

   d. English 100: 1 out of 1 (100%)

7. What percent did not pass the course?

   a. Overall: 9 out of 42 (21.4%)

   b. English 111: 2 out of 16 (12.5%)

   c. English 101: 7 out of 25 (28%)

   d. English 100: None

8. What was the G. P. A. of the English 01 students that did not immediately enroll in their credit English?

   a. Overall: 1.63

   b. English 111: 1.69

   c. English 101: 1.60

   d. English 100: 3.00

(For a visual representation of the above statistics see Graphs # 2-A, 2-B, 2-C.)

F. How do English 01 students who succeed on their first attempt at English 01 perform in their credit English course (those who finished)?

1. What percent received an A?

   a. Overall: 4 out of 85 (4.7%)

   b. English 111: None

   c. English 101: 4 out of 41 (9.8%)

   d. English 100: None

2. What percent received a B?

   a. Overall: 26 out of 85 (30.6%)

   b. English 111: 11 out of 43 (25.6%)

   c. English 101: 14 out of 41 (34.2%)

   d. English 100: 1 out of 1 (100%)

3. What percent received a C?

   a. Overall: 32 out of 85 (37.7%)

   b. English 111: 19 out of 43 (44.2%)

   c. English 101: 13 out of 41 (31.7%)

   d. English 100: None

4. What percent received a D?

   a. Overall: 12 out of 85 (14.1%)

   b. English 111: 8 out of 43 (18.6%)

   c. English 101: 4 out of 41 (9.8%)

   d. English 100: None

5. What percent received a C or better?

   a. Overall: 62 out of 85 (72.9%)

   b. English 111: 30 out of 43 (69.8%)

   c. English 101: 31 out of 41 (75.6%)

   d. English 100: 1 out of 1 (100%)

6. What percent passed the course?

   a. Overall: 74 out of 85 (87.1%)

   b. English 111: 38 out of 43 (88.4%)

   c. English 101: 35 out of 41 (85.4%)

   d. English 100: 1 out of 1 (100%)

7. What percent did not pass the course?

   a. Overall: 11 out of 85 (12.9%)

   b. English 111: 5 out of 43 (11.6%)

   c. English 101: 6 out of 41 (14.6%)

   d. English 100: None

8. What was the G. P. A. of those students who completed English 01 on their first attempt in their credit English course.

   a. Overall: 2.00

   b. English 111: 1.84

   c. English 101: 2.15

   d. English 100: 3.00 (only one student enrolled)

(For a visual representation of the preceding statistics see Graphs # 3-A, 3-B, 3-C.)

G. How do English 01 students who need two or more attempts at English 01 perform in their credit English course (those who finished)?

1. What percent received an A?

   a. Overall: None

   b. English 111: None

   c. English 101: None

2. What percent received a B?

   a. Overall: 3 out of 25 (12%)

   b. English 111: 3 out of 8 (37.5%)

   c. English 101: None

3. What percent received a C?

   a. Overall: 10 out of 25 (40%)

   b. English 111: 1 out of 8 (12.5%)

   c. English 101: 9 out of 17 (52.9%)

4. What percent received a D?

   a. Overall: 6 out of 25 (24%)

   b. English 111: 3 out of 8 (37.5%)

   c. English 101: 3 out of 17 (17.7%)

5. What percent received a C or better?

   a. Overall: 13 out of 25 (52%)

   b. English 111: 4 out of 8 (50%)

   c. English 101: 9 out of 17 (52.9%)

6. What percent passed the course?

   a. Overall: 19 out of 25 (76%)

   b. English 111: 7 out of 8 (87.5%)

   c. English 101: 12 out of 17 (70.6%)

7. What percent did not pass the course?

   a. Overall: 6 out of 25 (24%)

   b. English 111: 1 out of 8 (12.5%)

   c. English 101: 5 out of 17 (29.4%)

8. What was the G. P. A. of those English 01 students who needed two or more attempts at English 01 in their credit English course (those who finished)?

   a. Overall: 1.40

   b. English 111: 1.75

   c. English 101: 1.24

(For a visual representation of the above statistics see Graphs # 3-A, 3-B, 3-C.)

II. How do English 01 students perform in their required credit English courses in comparison to those students who did not have developmental English (those who finished the course). The non-developmental students will be referred to as "other" in this study.

A. Overall, how do the two groups compare?

		Developmental	Other
1.	What percent received an A?	4 out of 110 (3.6%)	55 out of 1388 (11.2%)
2.	What percent received a B?	29 out of 110 (26.4%)	406 out of 1388 (29.3%)
3.	What percent received a C?	42 out of 110 (38.2%)	457 out of 1388 (32.9%)
4.	What percent received a D?	18 out of 110 (16.4%)	155 out of 1388 (11.2%)
5.	What percent received a C or better?	75 out of 110 (68.2%)	1018 out of 1388 (73.3%)

		Developmental	Other
6.	What percent passed the course?	93 out of 110 (84.6%)	1173 out of 1388 (84.5%)
7.	What percent did not pass the course?	17 out of 110 (15.5%)	215 out of 1388 (15.5%)
8.	What were the G. P. A.s for the two groups?	1.86	2.09
9.	What percent withdrew? (or received an incomplete)	20 out of 130 (15.4%)	$\frac{23(I's)+216(W's)=239}{1627 \quad 1627}$ (14.7%)

(For a visual representation of the above statistics see Graph #4.)

B. How did the two groups perform in English 111 (those who finished)?

		Developmental	Other
1.	What percent received an A?	None	85 out of 729 (11.7%)
2.	What percent received a B?	14 out of 51 (27.5%)	212 out of 729 (29.1%)
3.	What percent received a C?	20 out of 51 (38.2%)	206 out of 729 (28.3%)
4.	What percent received a D?	11 out of 51 (21.6%)	94 out of 729 (12.9%)
5.	What percent received a C or better?	34 out of 51 (66.7%)	503 out of 729 (69%)
6.	What percent passed?	45 out of 51 (88.2%)	597 out of 729 (81.2%)
7.	What percent did not pass?	6 out of 51 (11.8%)	132 out of 729 (18.1%)
8.	What was the G. P. A. for these two groups?	1.82	2.03

(For a visual representation of the above statistics see Graph #5.)

C. How did these two groups perform in English 101 (those who finished)?

		Developmental	Other	
1.	What percent received an A?	4 out of 58 (6.9%)	70 out of 659 (10.6%)	
2.	What percent received a B?	14 out of 58 (24.1%)	194 out of 659 (29.4%)	
3.	What percent received a C?	22 out of 58 (37.9%)	251 out of 659 (38.1%)	
4.	What percent received a D?	7 out of 58 (12.1%)	61 out of 659 (9.3%)	
5.	What percent received a C or better?	40 out of 58 (69%)	515 out of 659 (78.2%)	
6.	What percent passed?	47 out of 58 (81%)	576 out of 659 (87.4%)	
7.	What percent did not pass?	11 out of 58 (19%)	83 out of 659 (12.6%)	
8.	What were the G. P. A.s of these two groups?	1.88	2.16	2.16

(For a visual representation of the above statistics see Graph #6.)

Conclusions:

1. Sixty-two percent of all English 01 students received an S (71% when considering only those students who completed the course). However, 99% of these S's occurred within the first two attempts. Thus, English 01 is meeting the demands of students in need of refreshing old skills or of students with the ability and/or motivation to learn rapidly. However, for students with extremely weak compositional skills or with severe learning disabilities, repeated exposure to the course does not lead to success in most cases.

   The success rate for second attempts (48%) is virtually the same as for first attempts (49%). This similiarity indicates that many students need the first quarter in English 01 to acquire the background that many first-time S's carry with them from high school or previous educational experience. This is especially true for older students who have been away from an educational setting for many years. However, success for third and subsequent attempts (20%) is far below that of the first and second, once again showing that numerous attempts by weaker students is not the answer for their particular difficulties.

   As a final point to the question of student success in English 01, it should be noted that students who re-enrolled in English 01 immediately after their first attempt performed better than those who waited one or more quarters before re-enrolling, thus proving that continuity of course material

is extremely important in the development of proper compositional skills. This same behavioral pattern will prove true when dealing with the transition from developmental English to credit English.

II. On the average, 1.24 quarters were necessary for students to successfully complete English 01, the fractional time period over one quarter being caused by students (21% of the total) who needed more than one quarter to complete English 01. It should be noted that of this 21% who were successful on second or later attempts 36 out of 39 (92%) were so on their second attempt, and only 3 out of 39 (8%) on third and all subsequent attempts, this once more pointing to the fact that repeated exposure to English 01 offers little to the extremely weak student.

III. Attrition (defined as those students who never entered their credit English nor were re-enrolled in English 01 in the Fall Quarter 1977) in English 01 was high. Nearly half, 149 out of 300 (49.7%) did not return to Thomas Nelson to either finish English 01 or enter their credit English. Over a third of the first time students, 114 out of 300 (38%) did not return. On the second attempt the percentage rose even higher, 33 out of 75 (44%), but of these second attempt students, those who did not re-enroll immediately had an astonishing attrition rate, 9 out of 14 (64.3%), once again showing the need for English 01 students to have continuity between re-enroll attempts.

The reasons for attrition of developmental students at a community college are varied and often unrelated to their experience in the classroom. One probable, major cause for attrition in English 01 is that many students use English 01 as preparation for English composition at other institutions. This view is supported by the fact that the largest category for attrition was the first attempt S group, 54 out of 114 (47.4%), which is the most successful category of all English 01 students, a category that would tend to continue its progress in English and evidently does, but at four-year institutions. Numerous other external factors frequently influence or cause a student to leave the community college, for example, lack of transportation, pregnancy, unemployment, poor health (especially older students), financial problems, or family troubles, such as difficulties with child care. Problems such as these are beyond the control of the developmental program and the developmental faculty member. However, a portion of this follow-up study has been dedicated to acquiring information on these external difficulties via a questionnaire for students who have left the developmental program. From their responses, developmental studies will be better able to aid and counsel these students in adhering to their educational goals.

PART III

Nearly three-quarters, 130 out of 185 (70.2%) of all successful English 01 students registered for their credit English course at Thomas Nelson. As mentioned previously, the majority of successful students who did not enter their credit English at TNCC probably failed to do so because they were preparing for English at other institutions

or may have encountered personal difficulties unrelated to their educational experience at Thomas Nelson. Furthermore, the longitudinal range of this study extended from the Fall Quarter of 1976 to the Fall Quarter of 1977. Historically, community college students have taken significantly longer to complete their degrees than traditional, full-time students at four-year institutions since many are part-time students with full-time family and employment obligations. This trend, due to inflationary pressures, has greatly increased over the recent past and appears to be a continuing element of the future. Therefore, a significant number of the 55 students (29.8%) who did not enroll in their credit English course at Thomas Nelson may actually have done so at a date beyond the range of this study.

Of those English 01 students who entered their credit English, the retention rate was high, 110 out of 130 (84.6%), especially when considering the aforementioned reasons for attrition in developmental students. After entering their credit English, 75 out of 110 (68.2%) developmental students received a C or better, while 93 out of 110 (84.6%) passed the course. The overall grade point average for English 01 students was 1.86. As can be seen by these statistics and those presented previously, the majority of students received grades of B or C, 71 out of 110 (64.5%), with very few receiving an A, 4 out of 110 (3.6%). This grade distribution is caused by numerous factors. As mentioned earlier, students who had high school English grades of C or better automatically entered their credit English, and those below this average, with no high school English, out of school for many years, or with low scores on the Nelson-Denny Test were placed into developmental English. However, after admittance into developmental English, these students were further tested by administration of a writing sample and the English 2600 Pre-test. Thus, students with skills not reflected in their high school transcripts nor on the Nelson-Denny Test were identified and placed in credit English. This extra testing resulted in leaving only those students with the most limited writing skills in English 01, and with this type of student, the expectation of an A was extremely slight; however, at the other extreme, the hope of a D in credit English was frequently the measure of success or the highest realistic goal.

Students with severe verbal problems---problems firmly ingrained by years of non-standard usage and little, if any, writing instruction---find it extremely difficult to correct these shortcomings in the ten weeks of a quarter, and constant re-enrollment frequently cripples the self-image and desire of the student who is working earnestly to overcome years of educational and socio-economic handicaps. Thus, to save this student and give him an opportunity to progress, a D is often the highest expectation an educationally deprived student and his instructor may hope for, especially when a student is in a certificate program like welding, automotive repair, or t.v. and air conditioning repair, where technical and mathematical skills can frequently carry the student on to a successful completion of his curriculum. With this perspective, not only should C or better be considered as the hallmark of the successful student, but, in many cases D or better. For the improvement of writing skills, unlike many technical ones, is a difficult life-long process, especially when the process for many students in the community college must start at middle age after years of inadequate background.

(For a specific breakdown of English 01 student grades in their credit English see Conclusions, Part II, Section I A, B, C and/or Chart I.)

Mentioned earlier was the fact that students who immediately re-enrolled in English 01 did far better than those who waited a quarter or more to do so. This same behavior is exemplified once again in the move from developmental English to credit English. The students who enrolled immediately in credit English did much better than those who did not. For example, 50 out of 68, (73.5%) of those who enrolled immediately received a C or better and 60 out of 68 (88.2%) passed the course; however, for those that waited a quarter or more the success rate was far less. Only 25 out of 42 (59.5%) received a C or better and only 33 out of 42 (78.6%) passed. The G.P.A.s for these two groups also reflected this difference: the immediate enrollers having a 1.99 and those that did not a 1.63.

Two groups that also deserved close comparison were those students who completed English 01 on their first attempt and those who needed two or more attempts. The students who passed on their first attempt did far better than those who needed more than one attempt. Of those needing only one attempt, 62 out of 85 (72.9%) received a C or better and 74 out of 85 (87.1%) passed while those with two or more attempts had only 13 out of 25 (52%) receive C or better and 19 out of 25 (76%) pass. The 52% at C or better for those of two or more attempts is the significant figure, for it is far below that of any other studied sub-group. These students, even though receiving an S, frequently do not profit as greatly from the course as those who pass after one attempt. Because these students are weaker in almost all cases and because the repeated exposure to nearly the same course content does little to aid them, for as the statistics show, simple repetition of the course is not the answer. However, it is important to note that these students should not be considered failures, but on the contrary, they have made great improvement despite not having in many cases received what would be traditionally accepted as a satisfactory grade, for in this group lies the core of educationally disadvantaged students who often function on a subliterate level or with severe learning, economic, social, or emotional liabilities.

The last aspect to be discussed is the performance of English 01 students in credit English as compared to those students without developmental preparation (the placement procedures for these two groups has been discussed previously). As would generally be expected, the non-developmental group --- herein referred to as the "other" group, performed at a higher level when considering A and B grades.

It was noted earlier that because of the long process needed for proper writing development, many English 01 students rarely can hope for A or B performance, but with the aid of Verbal Studies a relatively weak student can realistically aim at a solid C or above average C, for in most, if not all, English courses a C grade entails the following of directions along with average skills in composition, organization, development, spelling, grammar and mechanics --- precisely what English 01 has as its course objectives. To receive an A or B, a student must demonstrate these skills plus the added ability to write creatively, maturely, and originally; however, these skills are the outcome of years, not quarters, of development through

the practice and application of above average verbal skills, skills that are usually implanted at an early age, then nutured in a literate environment. This, of course, is not the environment that many English 01 students originate from, live in, or look forward to.

Although the "other" group surpasses developmental students in the A and B categories, when looking at the C or better statistics, English 01 students compare quite favorably, 68.2% for developmental as compared to 73.3% for the "other" group and even slightly surpasses the "other" group when the percent of those passing is considered, 84.6% to 84.5% for the "other" group. Furthermore, when taking into account the fact that the placement process, both in the Counseling Center and in English 01, effectively enrolls the better-prepared student into credit English and the poorly prepared student into English 01, the grade distribution should naturally show the "other" group predominating the upper ranges of the grade scale and English 01 in the lower. But when the total number of students passing is slightly higher than that of credit English, despite all the debilitating obstacles many English 01 students must overcome, the success of developmental English and the distance it brings these weaker students is indeed great and can be judged only as outstanding.

When considering the preparation in developmental English for both credit tracks -- English 111 (transfer) and English 101 (two year degree) -- the same pattern of grade distribution as discussed above occurs. English 01 students in both credit courses earn fewer A's and B's, but more C's and D's than the "other" group. However, when comparing the performance of developmental students in English 111 to developmental students in English 101, those in 111 out-perform their 101 counterparts as compared to the "other" group. For example, developmental students in English 101 surpassed the "other" group in only one area, D's (12.1% to 9.3%), an area composed generally of marginal and weak students, which makes for difficulty in clear and precise comparison. However, developmental students in English 111 out-performed the "other" group in C's (38.2% to 28.3%), D's (21.6% to 12.9%), overall passing (88.2% to 81.2%), and are almost equal in B's (27.5% to 29%) and C or better (66.7% to 69%). In fact, the only area in which the "other" group significantly out-performed the developmental students was in the A category (11.7% to none). But as mentioned earlier, because of the careful placement procedures, there is little chance for a developmental student receiving an A in English 111. Therefore, the more rigid and demanding exit level criteria for English 111 bound students might prove helpful for those entering English 101 also.

Recommendations:

Since the vast majority of students who successfully complete English 01 do so on their first attempt, 147 out of 186 (79%) and virtually all who succeed do so by their second attempt, 183 out of 186 (99%), an effort must be made to change Verbal Studies to better aid our re-enrolled students. Merely repeating the course over and over is not a solution. What was too difficult to understand on the first attempt usually remains so on the second, third, and fourth attempt for the weaker student if the

course format does not change to meet his special needs. In fact, the subsequent attempts become more difficult as frustration and defeatism grow. Furthermore, after numerous attempts, the weaker student may pass English 01 by force of sheer repetition; however, as earlier statistics showed, this repeating student does not do as well as his colleagues who passed on the first attempt.

The best solution to this problem would be a two quarter Verbal Studies for our weaker students (identified by high school transcripts, diagnostic testing, or by displaying difficulty with their first attempt at Verbal Studies). In this two quarter approach, the first course would be much simpler and more basic in content and would move at a slower pace, in other words, a course that would raise the weaker student to the level at which he could understand the concept of English 01 as it now stands and would emphasize writing in a concentrated effort at overcoming the student's near total lack of writing experience. Since not all students would enter at this level, only a certain number of sections would be offered each quarter.

Virtually without exception, students who re-enrolled immediately after their first attempt did better than those who waited a quarter or more to re-enroll. Therefore, developmental advising policy should require English 01 students to immediately re-enroll if they received an R or W on their first attempt, and only serious extenuating circumstances should be considered in allowing a student to vary from this policy.

Attrition is a difficult problem to approach since many students do not leave Thomas Nelson because of failure or any other difficulty, but on the contrary, are successful and leave after Thomas Nelson has given them the basic instruction they need. Also, frequent causes for leaving are not related to their educational experience (i.e. sickness, transportation, unemployment, etc.), so these too are not failures on the part of Thomas Nelson as a whole and Verbal Studies in particular. However, what must be done is to determine which students do drop out of English 01 due to frustration, anxiety, or disappointment experienced while in Verbal Studies (to a large degree; this is already being accomplished by the questionnaire developed by the members of this research committee). Once the students and their reasons for failure are identified, the faculty of Verbal Studies can begin to tailor English 01 (especially the first segment of Verbal Studies if the two course approach is implemented in the near future) to meet the needs of these academically frustrated students.

The problem of encouraging more students to enter their credit English course is also difficult to approach in light of attrition, for many students do not plan to enter their composition courses at Thomas Nelson, but at another institution. So only when the number of students who actually plan on taking their composition class at Thomas Nelson is known can a realistic evaluation of the 70.21% who do enter credit English at this institution be given. However, what can be emphasized is the fact that students who enroll in their credit English immediately after receiving an S in Verbal Studies perform far better than those who wait a quarter or more to enroll. Thus, as with re-enrolled students, the importance of keeping English courses in a continuous sequence cannot be over-emphasized, and consequently, advising policy should generally require successful English 01 students to immediately enroll in their credit English.

Of all in-house comparisons mentioned thus far, none shows such a stark difference as that between students who succeed on their first attempt in Verbal Studies and those who succeed after their second or later attempt. Those who succeed on their first attempt are far more successful in their credit English than those who need more than one attempt. When considering C or better grades, students who pass on their first attempt out perform those who need more than one attempt by 73% to 52%, when considering passing grades 87.1% to 76%, and when considering G.P.A. 2.00 as opposed to 1.28. This points once again to the fact that more attention needs to be paid to our weaker students. The more basic and personalized instruction that was mentioned earlier in reference to their lower success rate in Verbal Studies needs to be implemented, for their same lack of success, when they finally complete Verbal Studies, is carried over to their credit English courses. Yet, as also mentioned earlier, for the extremely weak students who are attempting to overcome life-long verbal inadequacies, this lesser achievement may be the best that can be expected -- a success in its own right.

As noted in the Conclusions, developmental students in English 111 perform much better in comparison to the "other" group than do their counterparts in English 101. To remedy this situation, English 101 students should be required to meet the same grammatical and even possibly the same compositional skills as those going to English 111. This would enable developmental 101 students to have the same thorough grammatical foundation that has allowed developmental 111 students to surpass all groups, including all groups of "other" students, in percent passing -- 88.2%. Also, since developmental 111 students are generally solid in their grammatical skills but apparently somewhat lacking in the rhetorical skills necessary for A's and B's in English 111, special in-class work or even a special class for 111-bound-students-only should be created to meet their special rhetorical and compositional needs.

APPENDIX

Appendix

A. Textbooks

Blumenthal, Joseph C. English 2600. 4th Ed. New York: Harcourt, Brace and Jovanovich, Inc., 1960.

Blumenthal, Joseph C. English 3200. 2nd Ed. New York: Harcourt, Brace, and Jovanovich, Inc., 1962.

Blumenthal, Joseph C. English 2200. 2nd Ed. New York: Harcourt, Brace, and Jovanovich, Inc., 1964.

Butler, Eugenia, Mary Ann Hickman, and Lalla Overby. Correct Writing. 2nd Ed. Lexington, Mass: D. C. Heath and Company, 1976.

Sullivan, Kathleen E. Paragraph Practice. 3rd Ed. New York: Macmillan Publishing Company, Inc., 1976.

A college-level dictionary (recommended).

(It should be noted that most students used only Correct Writing and English 2600. Those enrolled in a transfer program used the two aforementioned texts plus the first half of English 3200. Exceptionally weak students used the English 2200 rather than the English 2600. And re-enrolled students who had finished the lab portion of the course used Paragraph Practice instead of one of the Blumenthal texts.)

B. Student References

Self-Tutor Courses by TMI - Gralier

Hook, J. N., and William H. Evans. Individualized English Set H. Chicago: Follett Publishing Company, 1965.

LEARNING OBJECTIVES

The following list comprises the learning objectives for which the student in English 01 is responsible. These objectives will be covered in class and/or in lab. Because English 01 is preparing students for one of several different English courses according to their respective curricula, the rate of achievement for students will differ. For English 100 or 101, a student must achieve the following objectives at a 71% mastery level; for English 111, a student must achieve the objectives at an 81% mastery level.

WRITING

A student will be able to:

1. Define basic components of a paragraph: topic sentence, developing sentences, and the concluding sentence; and its focus on one central idea.

2. Recognize the existence of four main types of prose: narrative, descriptive, expository, and persuasive.

3. Given a supplement on the narrative paragraph and the requirements for such a paragraph, identifying its special features including chronological order, write a paragraph of this type, according to the basic components of a paragraph.

4. Given a supplement on the descriptive paragraph and the requirements for a paragraph of this kind, write a descriptive paragraph using spatial order and/or organization by the senses, according to the basic components of a paragraph.

5. Given a supplement on the process paragraph and the requirements for a paragraph of this kind, compose a how-to paragraph, according to the basic components of a paragraph.

6. Given a supplement on the expository paragraph and the requirements for a paragraph of this kind, compose an expository paragraph, using the statement-explanation-illustration method of organization, according to the basic components of a paragraph.

7. Given a supplement on the argumentative paragraph and the requirements for a paragraph of this kind, compose an argumentative paragraph, according to the basic components of a paragraph.

8. Given a supplement on the comparison/contrast paragraph and the requirements for a paragraph of this kind, compose a comparison/contrast paragraph, according to the basic components of a paragraph.

Note: Since only 5 paragraphs are required in English 01, the selection of paragraph types is up to each instructor.

GRAMMAR

A student will be able to:

1. Define the eight parts of speech: noun, pronoun, verb, adjective, adverb, preposition, conjunction, and interjection.

2. Identify words in a sentence as to their parts of speech.

3. Write a sentence illustrating each part of speech, underlining the required part of speech.

4. Define prepositional phrase.

5. Identify prepositional phrases in sentences.

6. Write sentences containing prepositional phrases.

7. Distinguish between adjectival and adverbial prepositional phrases.

8. Recognize verbs as action or linking verbs.

9. List the most common linking verbs.

10. Recognize helping verbs in verb phrases.

11. Conjugate a regular verb in the simple present, past, and future tenses.

12. Recognize a verb as a regular or irregular.

13. Conjugate the irregular verb be in the simple present, past, and future tenses.

14. State the three parts of a verb (present form, past form, past participle), and list these parts for a regular verb.

15. Define sentence, subject, verb, and predicate.

16. Identify subjects of sentences.

17. Identify verbs of sentences.

18. Identify predicates of sentences.

19. Write sentences, underlining the subject in each sentence.

20. Write sentences, underlining the verb in each sentence.

21. Write sentences, underlining the predicate in each sentence.

22. Define the following parts of a sentence: subject complement, direct object, and indirect object.

23. Identify subject complements in sentences.

24. Identify direct objects in sentences.

25. Identify indirect objects in sentences.

26. Write sentences containing subject complements, underlining the subject complements.

27. Write sentences containing direct objects, underlining the direct objects.

28. Write sentences containing indirect objects, underlining the indirect objects.

29. State the four basic sentence patterns:
    a. subject-verb
    b. subject-action verb-direct object
    c. subject-action verb-indirect object-direct object
    d. subject-linking verb-subject complement

30. Recognize singular and plural forms of nouns and pronouns, including collective nouns.

31. Recognize agreement between subjects and verbs in all sentences:
    a. where prepositional phrases intervene between subject and verb
    b. where subjects are compound, with one being singular the other plural
    c. where subjects are nouns of quantity or amount
    d. where in adjective clauses the relative pronoun is separated from its antecedent

32. Identify appropriate subject-verb agreement in sentences.

33. Write sentences where subjects and verbs agree.

34. Know the correct use of subject and object forms of personal pronouns.

35. Write sentences containing subject and object forms of personal pronouns used correctly.

36. Define <u>antecedent</u>.

37. Identify the antecedents or pronouns.

38. Recognize agreement between pronoun and antecedent.

39. Define the difference between a phrase and a clause.

40. Define and distinguish the difference between dependent and independent clauses.

41. Identify noun, adjective, and adverb clauses by
    a. their different functions in a sentence
    b. their clause signals

42. Write sentences containing each of the 3 kinds of dependent clauses.

43. Given two simple sentences, rewrite them as a compound sentence, using the conjunctions and, but, or or.

44. Given two simple sentences, rewrite them as a complex sentence by subordination.

45. Define: sentence fragments, comma splices, and fused sentences.

46. Identify these errors of sentence fragments, comma splices, and fused sentences.

47. Know how to correct sentence fragments, comma splices, and fused sentences.

48. Define verbal.

49. List the four types of verbals (present participles, past participles, infinitives, and gerunds) and the ways to form them.

50. Define verbal phrase.

51. Identify verbal phrases:
    a. participial phrases
    b. infinitive phrases
    c. gerund phrases in sentences

52. Write sentences containing the three kinds of verbal phrases, underlining the required phrase.

53. Define appositive, and write a sentence illustrating its use.

54. Define coordination, and name three ways to coordinate two sentences:
    a. use of the coordinating conjunction
    b. use of the semicolon
    c. use of the semicolon with a conjunctive adverb

55. Define subordination, and name three methods of subordination:
    a. verbal phrase
    b. dependent clause
    c. appositive word-group

56. Use commas appropriately:
    a. to separate independent clauses before the coordinating conjunction
    b. to separate 3 or more items in a series
    c. to separate coordinate adjectives
    d. to avoid confusion
    e. to set off nonrestrictive modifiers and appositives
    f. to set off conjunctive adverbs, mild interjections, and interrupting or modifying phrases
    g. to set off introductory adverb clauses
    h. to set off introductory verbal phrases
    i. to set off 2nd and 3rd parts of dates and addresses
    j. to set off the name of person being addressed
    k. to set off speaker from a quotation
    l. to set off a long introductory prepositional phrase

57. Use semicolons appropriately:
    a. to separate two independent clauses not linked by a coordinating conjunction
    b. to replace commas in a heavily punctuated sentence

58. Use colons appropriately to introduce a list, explanation, or formal quotation at the end of a complete sentence.

59. Use quotation marks appropriately.

60. Use capital letters appropriately.

61. Use the apostrophe appropriately.
    a. in possessive case
    b. in contractions

62. Use terminal punctuation appropriately:
    a. question mark
    b. exclamation mark
    c. period

Teaching Procedures:

After a writing sample and grammar pretest to verify proper placement and analyze student needs, Verbal Studies begins with its two-fold teaching approach. On Monday, Wednesday, and Friday, the class is conducted by the lecture-discussion method, covering the various course objectives, reviewing homework, and discussing the methods and examples of paragraph writing as stated in Correct Writing. On Tuesday and Thursday, however, the class works with whatever lab text(s) is required by the student's placement and curriculum: English 2200, English 2600, English 3200.

Grading:

A student in the developmental English program is graded by:

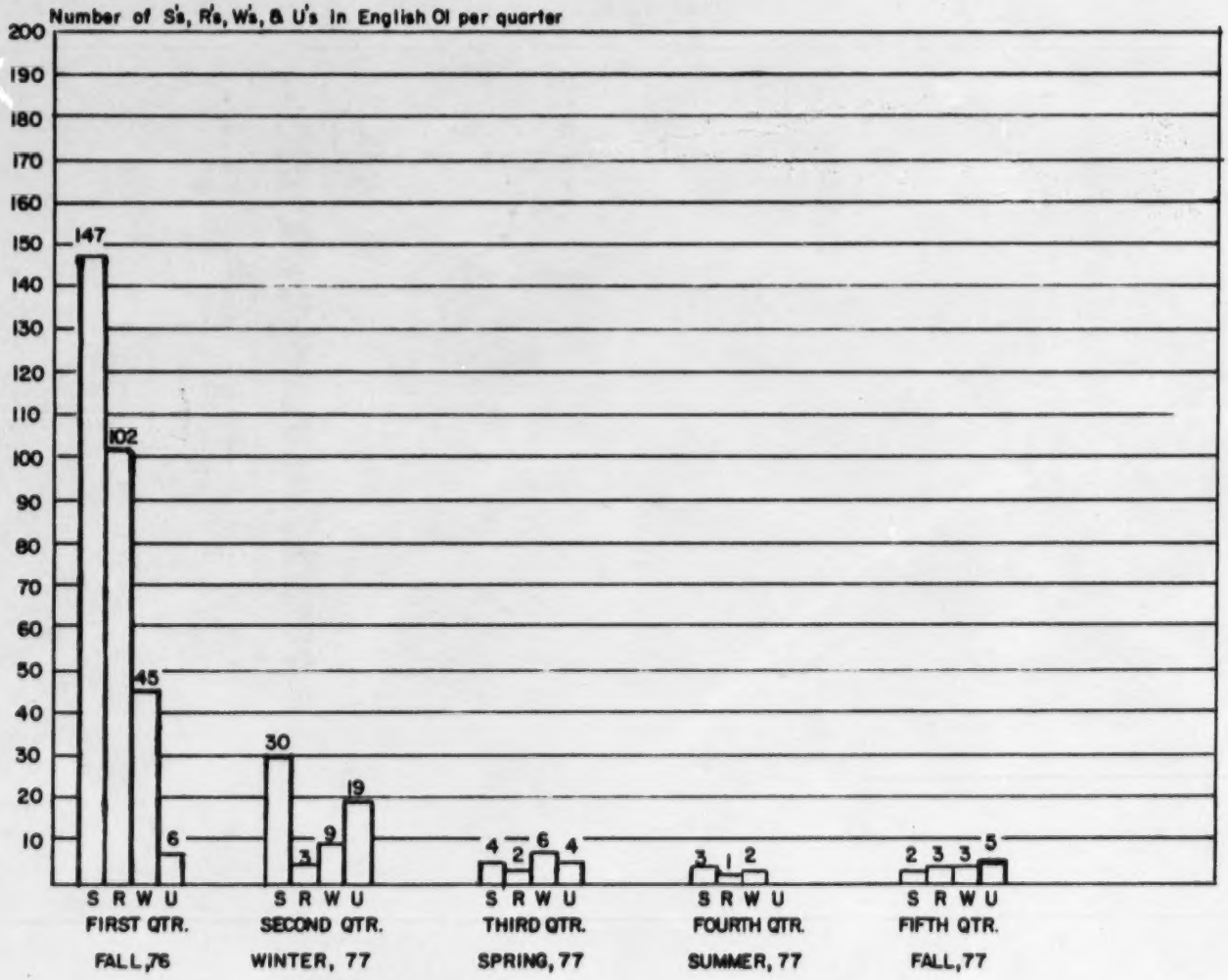
1. Five paragraphs which have an average of C-/C- for students entering either English 100 or 101 or an average grade of B-/B- for students entering English 111.

2. Test scores on the text and lectures which must have an average of 71% or better for students entering English 100 or 101 and 81% or better for students entering English 111.

3. Completion of lab requirements with a grade of 81% or better for students entering English 100 or 101 and a grade of 81% or better for students entering English 111, with 100 and 101 bound students needing to complete English 2600 and the 111 bound student needing to complete English 2600 and the first half of English 3200.

Individual progress sheets are kept by the instructor and reviewed by the student and the instructor during quarterly conferences.

GRAPH NO. I


Number of S's, R's, W's, & U's in English 01 per quarter
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
147
102
45
6
30
3
9
19
4
2
6
4
3
1
2
2
3
3
5
S R W U
FIRST QTR.
FALL, 76
S R W U
SECOND QTR.
WINTER, 77
S R W U
THIRD QTR.
SPRING, 77
S R W U
FOURTH QTR.
SUMMER, 77
S R W U
FIFTH QTR.
FALL, 77

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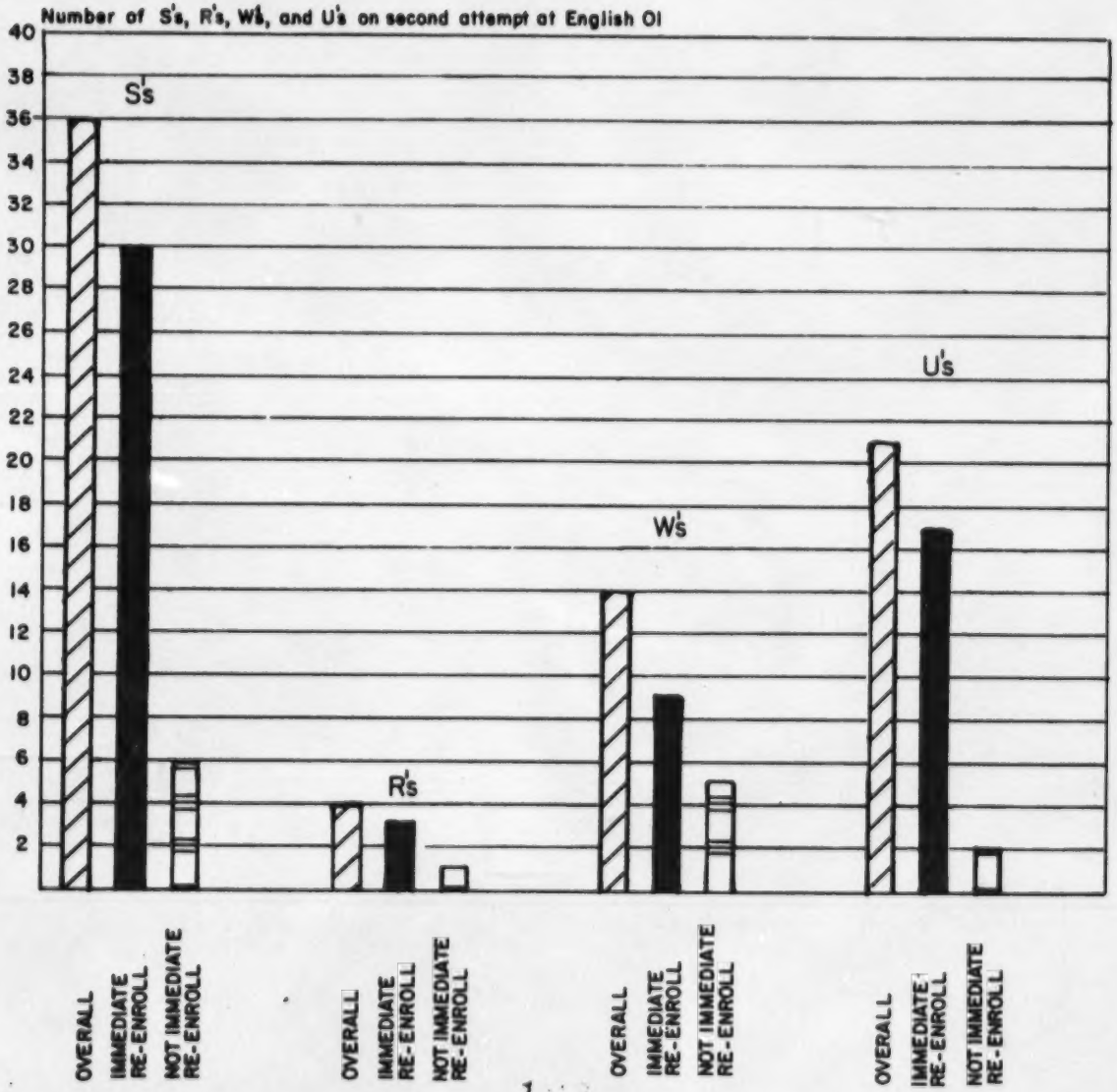
Number of S's, R's, W's, and U's on second attempt at English 01
40
38
36
34
32
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
S's
R's
W's
U's
OVERALL
IMMEDIATE RE-ENROLL
NOT IMMEDIATE RE-ENROLL
OVERALL
IMMEDIATE RE-ENROLL
NOT IMMEDIATE RE-ENROLL
OVERALL
IMMEDIATE RE-ENROLL
NOT IMMEDIATE RE-ENROLL
OVERALL
IMMEDIATE RE-ENROLL
NOT IMMEDIATE RE-ENROLL

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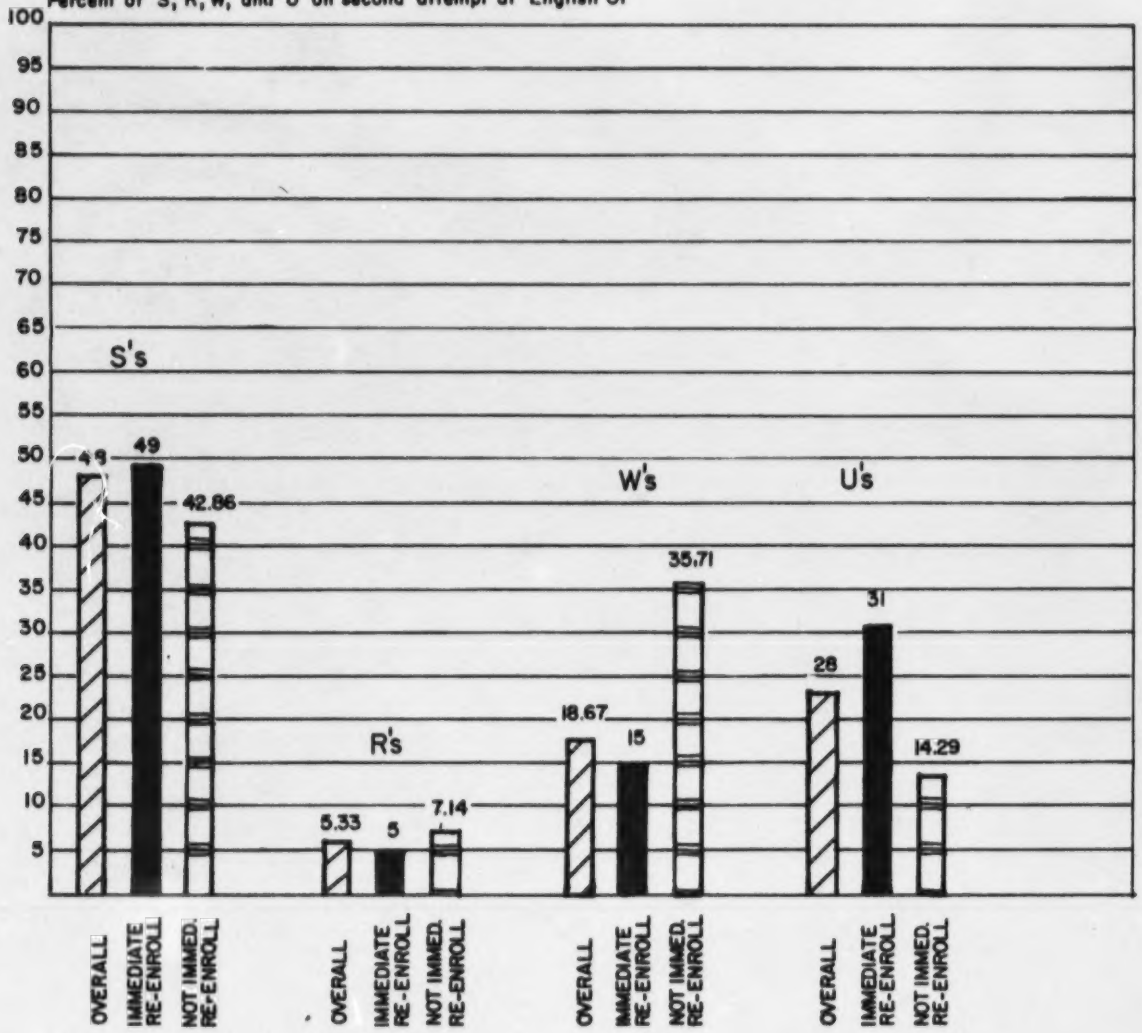
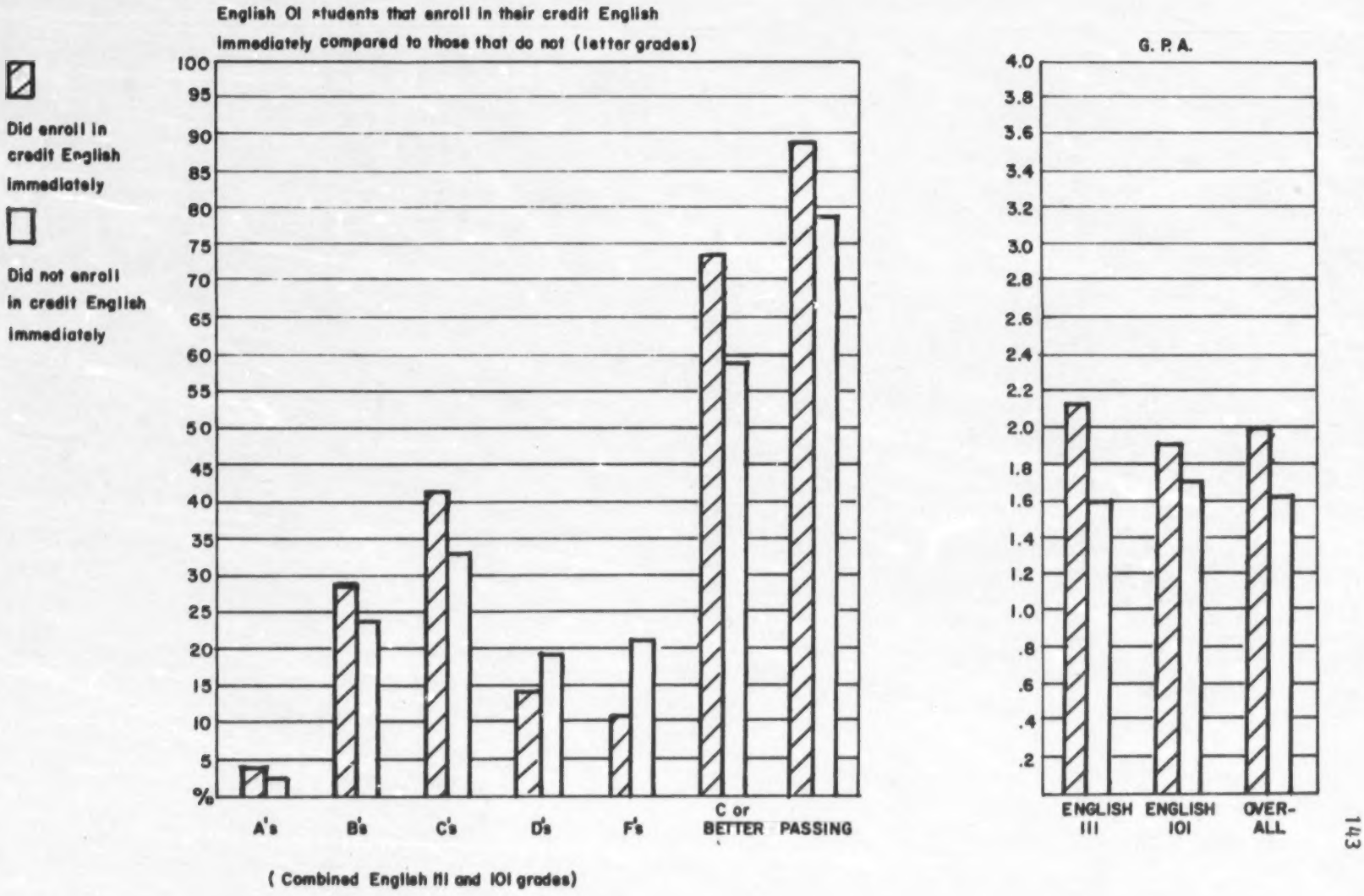

Percent of S, R, W, and U on second attempt at English 01
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
S's
R's
W's
U's
49
49
42.86
5.33
5
7.14
18.67
15
35.71
28
31
14.29
OVERALL
IMMEDIATE RE-ENROLL
NOT IMMED. RE-ENROLL
OVERALL
IMMEDIATE RE-ENROLL
NOT IMMED. RE-ENROLL
OVERALL
IMMEDIATE RE-ENROLL
NOT IMMED. RE-ENROLL
OVERALL
IMMEDIATE RE-ENROLL
NOT IMMED. RE-ENROLL

CHART NO. 1

OVERALL PERFORMANCE of English 01 students in credit English

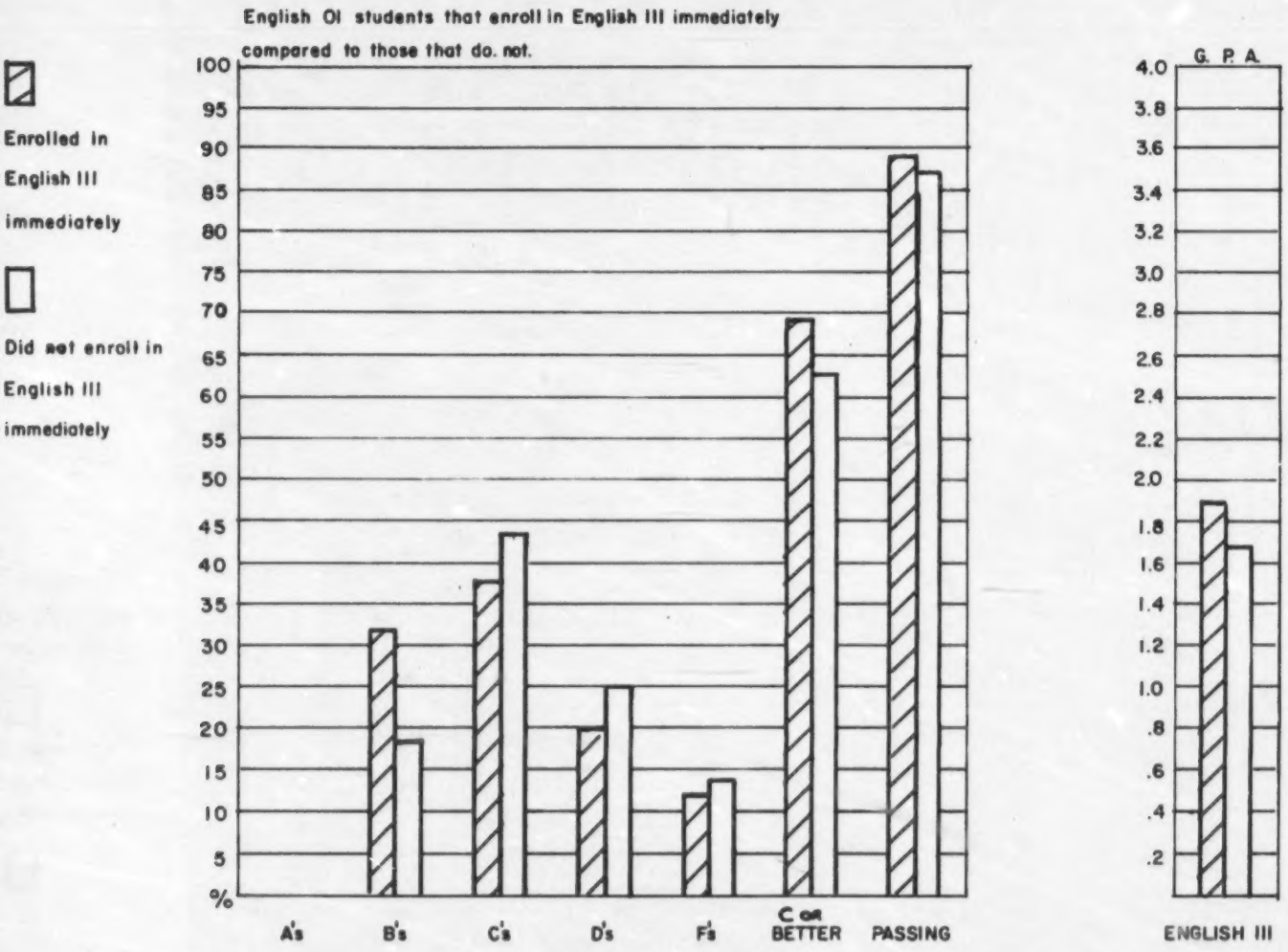
	A's	B's	C's	D's	F's	C or BETTER	PASSING	G
OVERALL	$\frac{4}{110}$ = 3.64 %	$\frac{29}{110}$ = 26.36%	$\frac{42}{110}$ = 38.18%	$\frac{18}{110}$ = 16.36 %	$\frac{17}{110}$ = 15.46%	$\frac{75}{110}$ = 68.18%	$\frac{93}{110}$ = 84.55%	
ENGLISH 111	0 = 0 %	$\frac{14}{51}$ = 27.45%	$\frac{20}{51}$ = 39.22 %	$\frac{11}{51}$ = 21.57 %	$\frac{6}{51}$ = 11.77 %	$\frac{34}{51}$ = 66.67%	$\frac{45}{51}$ = 88.24%	
ENGLISH 101	$\frac{4}{58}$ = 6.90%	$\frac{14}{58}$ = 24.14 %	$\frac{22}{58}$ = 37.93 %	$\frac{7}{58}$ = 12.07 %	$\frac{11}{58}$ = 18.97 %	$\frac{40}{58}$ = 68.97 %	$\frac{47}{58}$ = 81.04 %	
ENGLISH 100	0 = 0%	$\frac{1}{1}$ = 100%	0 = 0 %	0 = 0 %	0 = 0 %	$\frac{1}{1}$ = 100 %	$\frac{1}{1}$ = 100%	

GRAPH NO. 2-A

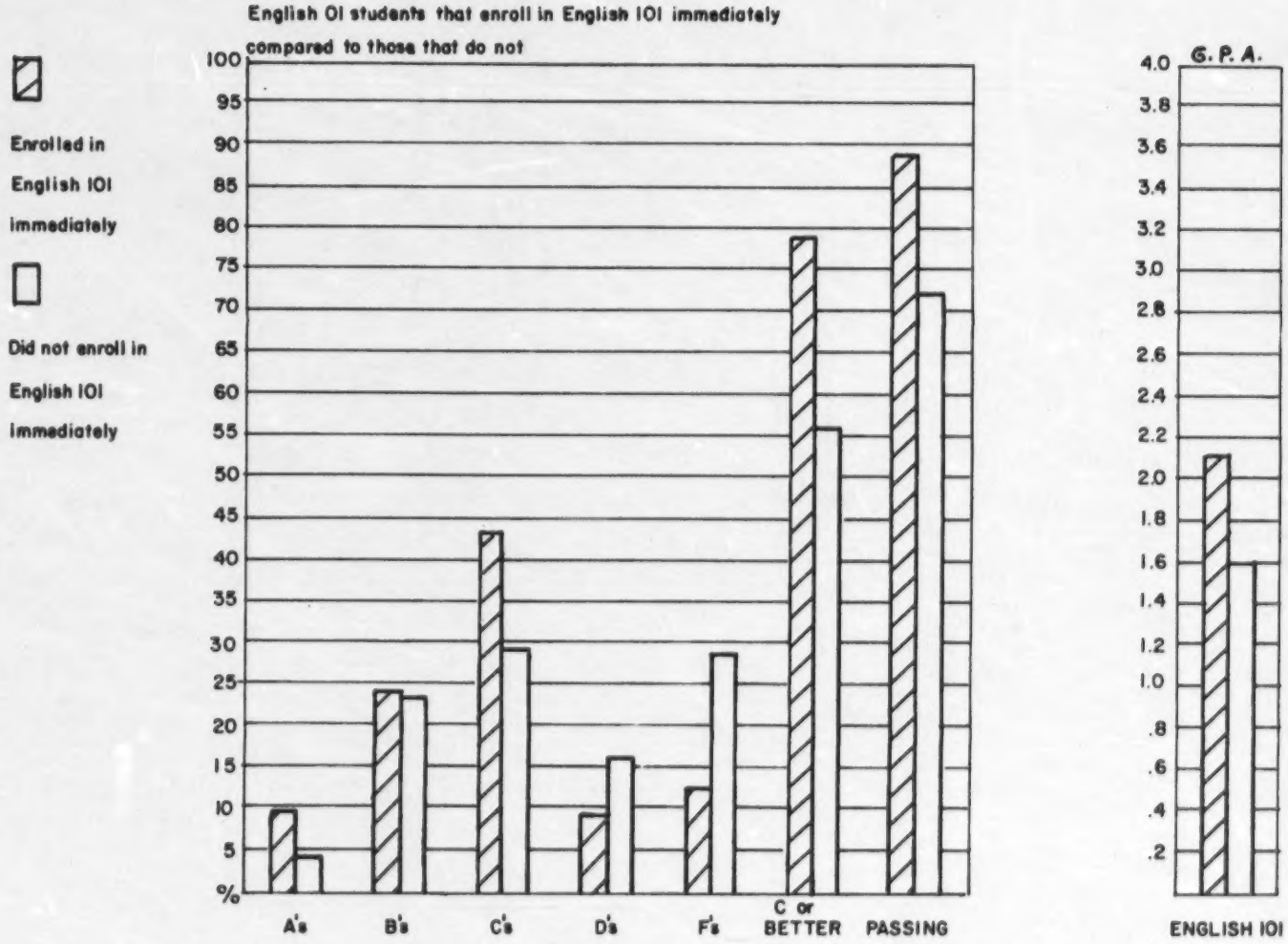


143

Graph No. 2-B

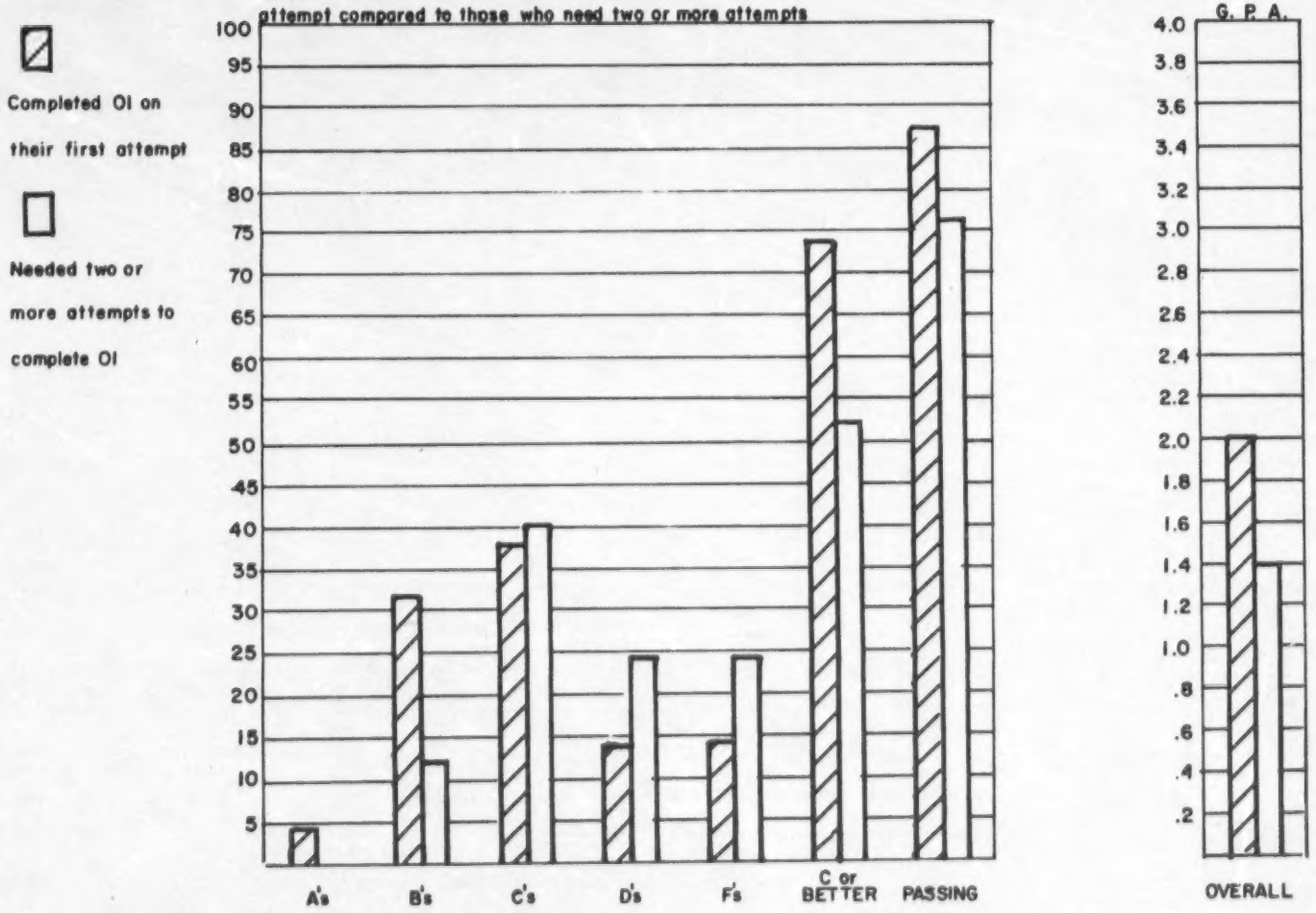

English OI students that enroll in English III immediately compared to those that do. not.
Enrolled in English III immediately
Did not enroll in English III immediately
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
%
A's
B's
C's
D's
F's
C OR BETTER
PASSING
G. P. A.
4.0
3.8
3.6
3.4
3.2
3.0
2.8
2.6
2.4
2.2
2.0
1.8
1.6
1.4
1.2
1.0
.8
.6
.4
.2
ENGLISH III

GRAPH NO. 2-C


English 01 students that enroll in English 101 immediately compared to those that do not
Enrolled in English 101 immediately
Did not enroll in English 101 immediately
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
%
A's
B's
C's
D's
F's
C or BETTER
PASSING
G. P. A.
4.0
3.8
3.6
3.4
3.2
3.0
2.8
2.6
2.4
2.2
2.0
1.8
1.6
1.4
1.2
1.0
.8
.6
.4
.2
ENGLISH 101

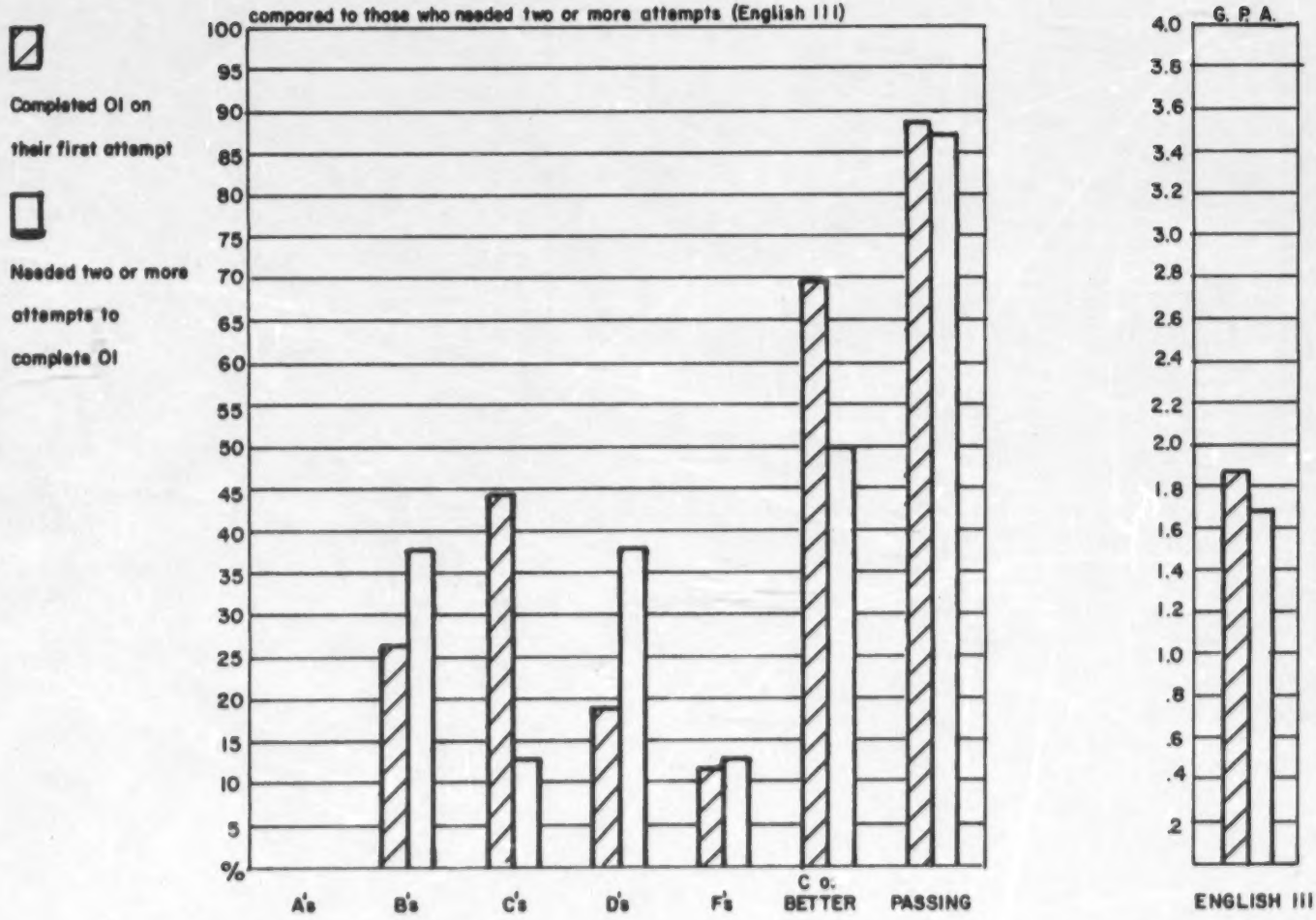
GRAPH NO. 3-A

English OI students who complete the course on their first attempt compared to those who need two or more attempts



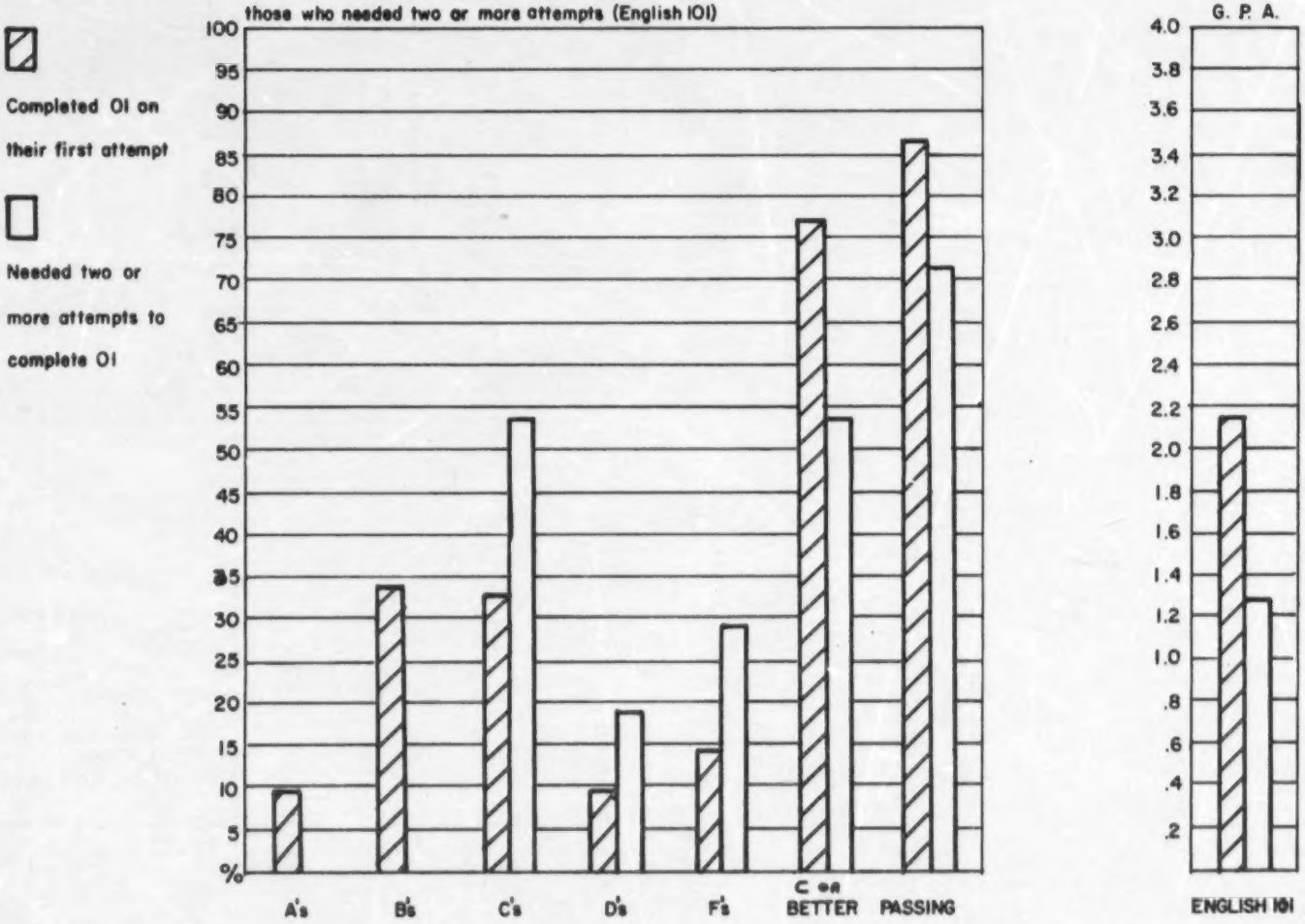
GRAPH NO. 3-B

English OI students who complete English OI on their first attempt compared to those who needed two or more attempts (English III)



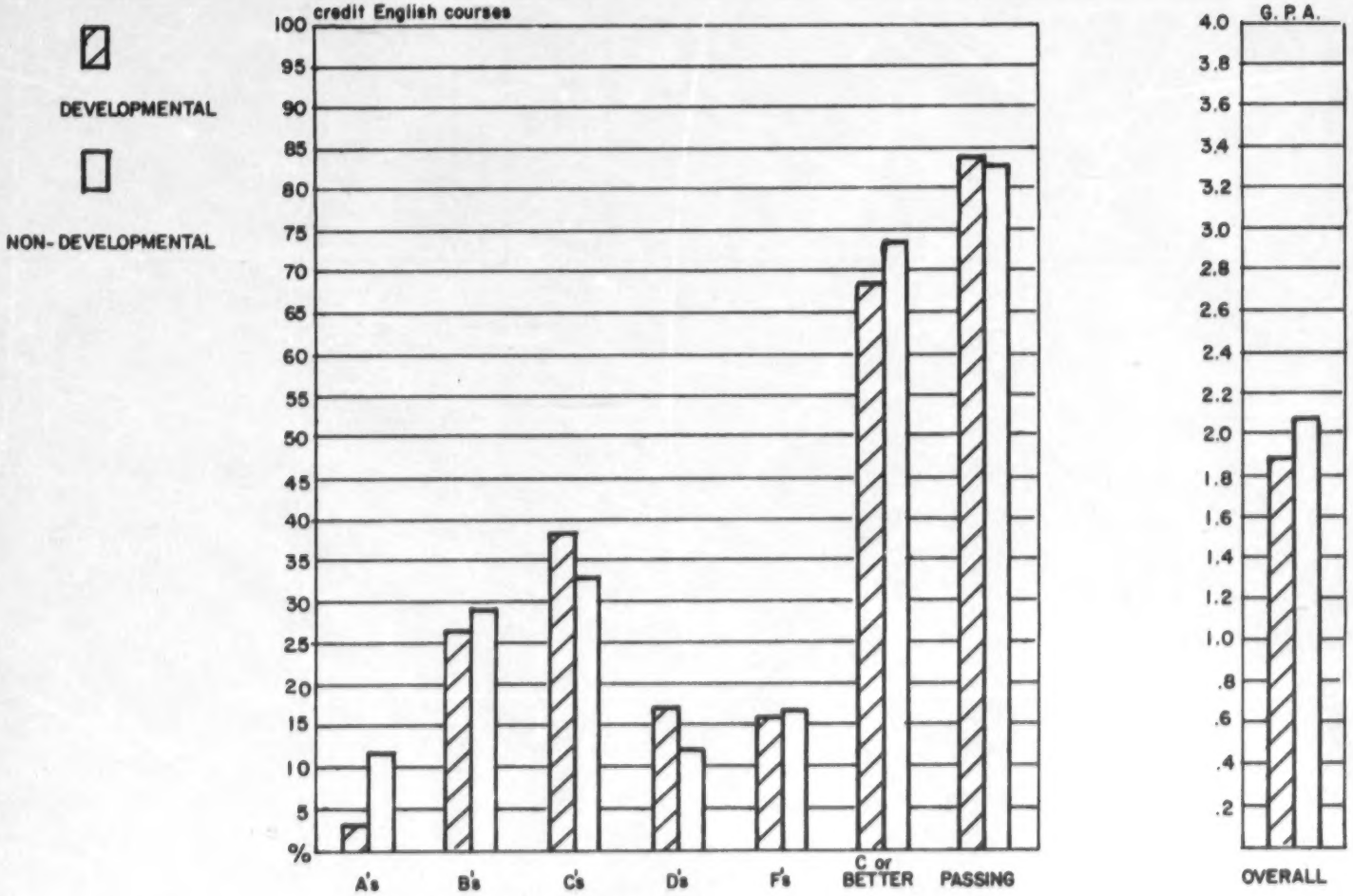
GRAPH NO. 3C

ENGLISH 01 students who complete English 01 on their first attempt compared to those who needed two or more attempts (English 101)

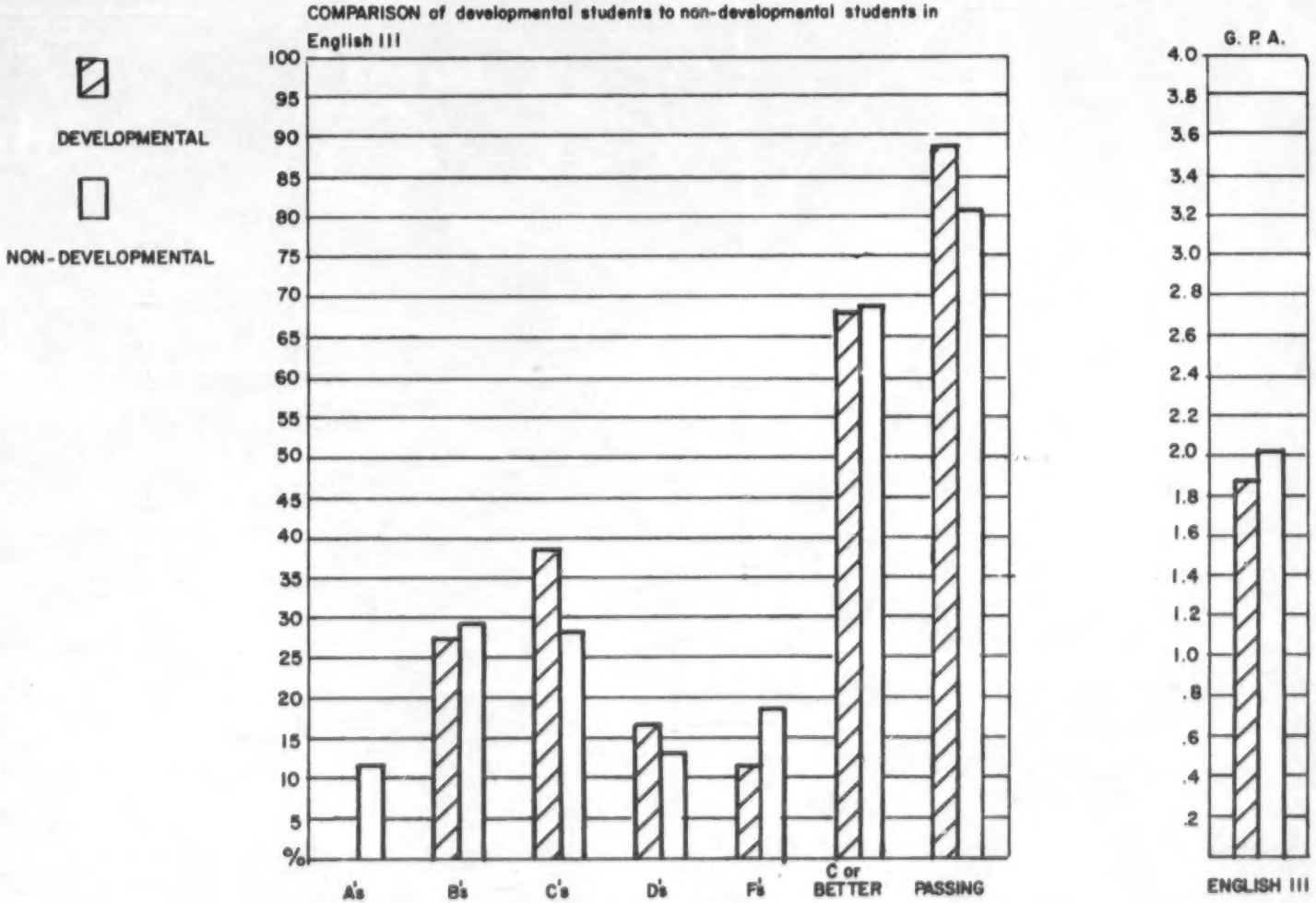


GRAPH NO. 4

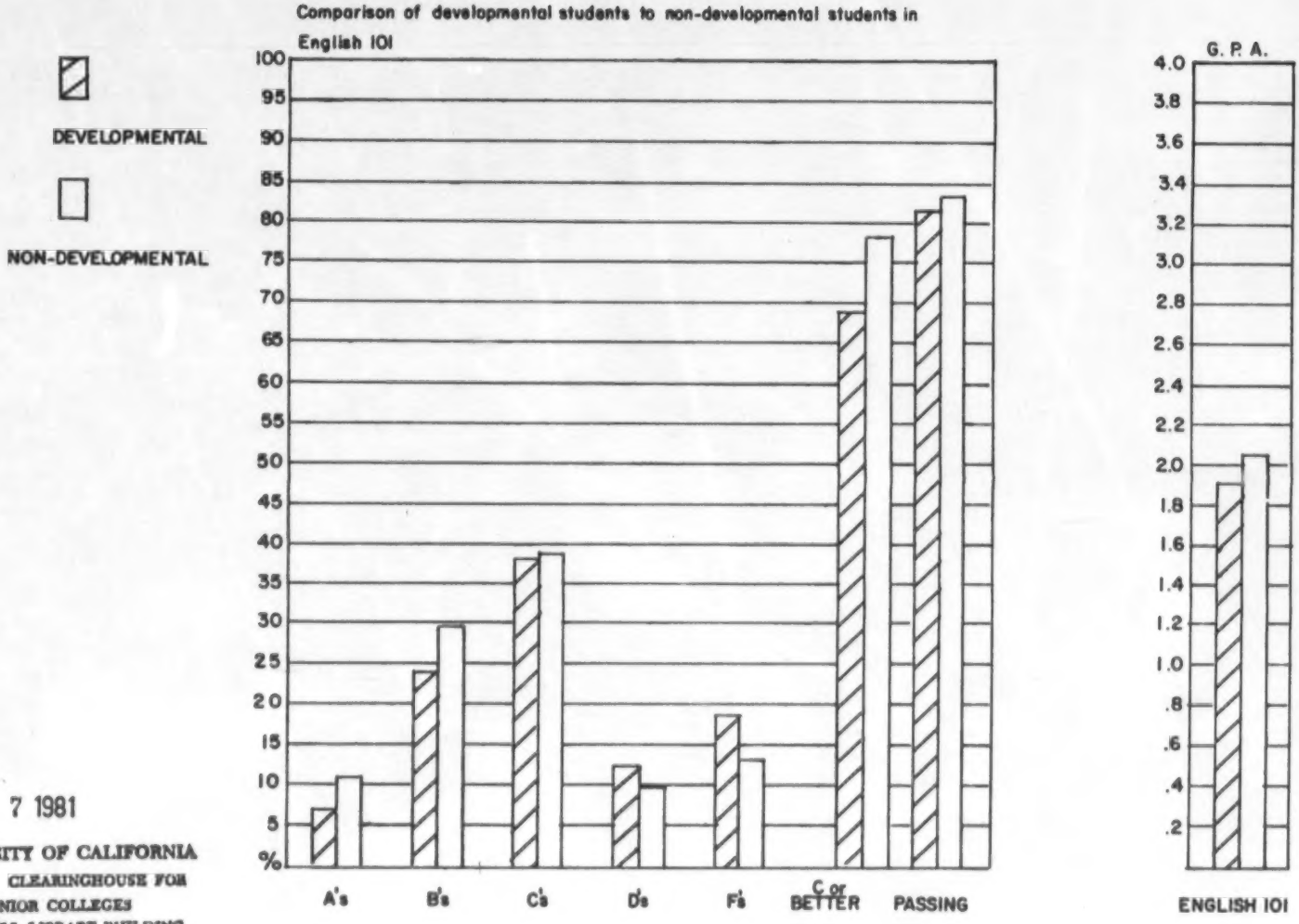
Overall comparison of developmental students to non-developmental students in credit English courses



GRAPH NO. 5


COMPARISON of developmental students to non-developmental students in English III
DEVELOPMENTAL
NON-DEVELOPMENTAL
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
%
A's
B's
C's
D's
F's
C or BETTER
PASSING
G. P. A.
4.0
3.8
3.6
3.4
3.2
3.0
2.8
2.6
2.4
2.2
2.0
1.8
1.6
1.4
1.2
1.0
.8
.6
.4
.2
ENGLISH III

GRAPH NO. 6



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